CHAPTER 32

LANDING GEAR

LIST OF EFFECTIVE PAGES

N, R or D indicates pages which are New, Revised or Deleted respectively.

Remove and insert the affected pages and complete the Record of Revisions and the Record of Temporary Revisions as necessary.

CH/SE/SU	C	PAGE	DATE
L.E.P.	R	A	May 31/03
L.E.P.	R	1	May 31/03
L.E.P.	R	2	May 31/03
L.E.P.	R	3	May 31/03
L.E.P.	R	4	May 31/03
L.E.P.	R	5	May 31/03
L.E.P.	R	6	May 31/03
L.E.P.	R	7	May 31/03
L.E.P.	R	8	May 31/03
L.E.P.	R	9	May 31/03
L.E.P.	R	10	May 31/03
L.E.P.	R	11	May 31/03
L.E.P.	R	12	May 31/03
L.E.P.	R	13	May 31/03
L.E.P.	R	14	May 31/03
L.E.P.	R	15	May 31/03
L.E.P.	R	16	May 31/03
L.E.P.	R	17	May 31/03
L.E.P.	R	18	May 31/03
L.E.P.	R	19	May 31/03
L.E.P.	R	20	May 31/03
L.E.P.	R	21	May 31/03
L.E.P.	R	22	May 31/03
L.E.P.	R	23	May 31/03
L.E.P.	R	24	May 31/03
L.E.P.	R	25	May 31/03
L.E.P.	R	26	May 31/03
L.E.P.	R	27	May 31/03
L.E.P.	D	28	

CHAPTER 32

LANDING GEAR

LIST OF EFFECTIVE PAGES

N, R or D indicates pages which are New, Revised or Deleted respectively.

Remove and insert the affected pages and complete the Record of Revisions and the Record of Temporary Revisions as necessary.

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
32-00-00		30	Aug 30/81	32-00-00		432	Nov 30/81
32-00-00		31	Aug 30/81	32-00-00		433	May 30/81
32-00-00		32	Aug 30/81	32-00-00		434	Sep 30/91
32-00-00		33	Aug 30/81	32-00-00		435	Mar 31/00
32-00-00		34	Jan 31/91	32-00-00		436	Mar 31/00
32-00-00		35	Aug 30/81	32-00-00		437	Mar 31/00
32-00-00		301	Mar 27/97	32-00-00		438	Mar 31/00
32-00-00		302	May 30/82	32-00-00		439	Mar 31/00
32-00-00		303	May 30/82	32-00-00		440	Mar 31/00
32-00-00		304	Nov 30/80	32-00-00		441	Mar 31/00
32-00-00		305	Nov 30/80	32-00-00		442	Mar 31/00
32-00-00		306	Feb 28/81	32-00-00		443	Mar 31/00
32-00-00		307	Nov 30/80	32-00-00		444	Mar 31/00
32-00-00		308	Feb 28/81	32-00-00		445	Mar 31/00
32-00-00		309	Nov 30/80				
32-00-00		310	Nov 30/80	32-10-00		1	May 30/82
32-00-00		311	Nov 30/80	32-10-00	R	2	May 31/03
32-00-00		401	Sep 30/92	32-10-00		3	Aug 30/75
32-00-00		402	Sep 30/91	32-10-00		601	Feb 28/81
32-00-00		403	Sep 30/91	32-10-00		602	Feb 28/81
32-00-00		404	Sep 30/91	32-10-00		603	Feb 28/81
32-00-00		404 A	Sep 30/91	32-10-00		604	Mar 27/97
32-00-00		404 B	Sep 30/91	32-10-00		605	Mar 27/97
32-00-00		405	Feb 28/81	32-10-00		606	Mar 27/97
32-00-00		406	Feb 28/81				
32-00-00		407	Feb 28/81	32-11-00		1	May 30/76
32-00-00		408	Feb 28/81	32-11-00	R	2	May 31/03
32-00-00		409	Feb 28/81	32-11-00		3	Aug 30/75
32-00-00		410	Feb 28/81	32-11-00		4	May 30/76
32-00-00		411	Feb 28/81	32-11-00		5	May 30/76
32-00-00		412	Feb 28/81	32-11-00		6	Aug 30/78
32-00-00		413	Feb 28/81	32-11-00		7	May 30/76
32-00-00		414	Feb 28/81	32-11-00		8	Aug 30/78
32-00-00		415	Feb 28/81	32-11-00		9	Nov 30/78
32-00-00		416	Feb 28/81	32-11-00		10	Nov 30/78
32-00-00		417	Feb 28/81	32-11-00		11	Nov 30/78
32-00-00		418	Feb 28/81	32-11-00		12	Nov 30/78
32-00-00		419	Feb 28/81	32-11-00		13	Nov 30/78
32-00-00		420	Feb 28/81	32-11-00		14	Nov 30/78
32-00-00		421	Sep 30/87	32-11-00		15	Jan 31/91
32-00-00		422	Feb 28/81	32-11-00		16	Jan 31/91
32-00-00		423	Feb 28/81	32-11-00		17	Jan 31/91
32-00-00		424	Feb 28/81	32-11-00		18	Jan 31/91
32-00-00		425	Feb 28/81	32-11-00		19	Jan 31/91
32-00-00		426	Feb 28/81	32-11-00		401	Mar 31/98
32-00-00		427	Feb 28/81	32-11-00		402	Feb 28/81
32-00-00		428	Mar 31/99	32-11-00		403	Feb 28/81
32-00-00		429	May 30/81	32-11-00		404	Feb 28/81
32-00-00		430	May 30/81	32-11-00		405	Feb 28/81
32-00-00		431	May 30/81	32-11-00		406	Feb 28/81

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
32-11-00		407	Nov 30/85	32-11-00		609	Mar 30/01
32-11-00		408	Nov 30/85	32-11-00		610	Mar 30/01
32-11-00		408A	Nov 30/85	32-11-11		401	Mar 28/02
32-11-00		408B	Nov 30/85	32-11-11		402	Mar 28/02
32-11-00		409	Nov 30/85	32-11-11		403	Mar 28/02
32-11-00		410	Nov 30/80	32-11-11		404	Mar 28/02
32-11-00		411	Nov 30/80	32-11-11		405	Feb 28/81
32-11-00		412	Feb 28/81	32-11-11		406	Feb 28/81
32-11-00		413	Nov 30/80	32-11-11		407	Mar 31/98
32-11-00		414	Nov 30/80	32-11-11		408	Nov 30/76
32-11-00		415	Feb 28/81	32-11-11		409	Nov 30/77
32-11-00		416	Feb 28/81	32-11-11		410	Feb 28/81
32-11-00		417	Nov 30/80	32-11-11		411	Feb 28/81
32-11-00		418	Feb 28/81	32-11-11		412	Feb 28/81
32-11-00		419	Feb 28/81	32-11-11		413	Feb 28/81
32-11-00		420	Nov 30/80	32-11-11		414	Feb 28/81
32-11-00		421	Mar 31/98	32-11-11		415	Nov 30/80
32-11-00		422	Nov 30/80	32-11-11		416	Nov 30/80
32-11-00		422A	Jan 31/91	32-11-11		417	Feb 28/81
32-11-00		422B	Jan 31/91	32-11-11		418	Feb 28/81
32-11-00		422C	Jan 31/91	32-11-11		419	Mar 31/98
32-11-00		422D	Jan 31/91	32-11-11		420	Nov 30/80
32-11-00		423	Mar 31/98	32-11-11		421	Nov 30/80
32-11-00		424	Aug 30/81	32-11-11		422	Nov 30/80
32-11-00		425	Nov 30/84	32-11-11		423	Feb 28/81
32-11-00		426	Aug 30/81	32-11-11		424	Feb 28/81
32-11-00		427	Aug 30/81	32-11-12		401	Feb 28/81
32-11-00		428	Nov 30/80	32-11-12		402	Sep 30/92
32-11-00		429	Nov 30/80	32-11-12		403	Sep 30/92
32-11-00		430	Aug 30/81	32-11-12		404	Sep 30/92
32-11-00		431	Aug 30/81	32-11-12		405	Mar 27/97
32-11-00		432	Aug 30/81	32-11-13		401	Mar 30/01
32-11-00		433	Aug 30/81	32-11-13		402	Mar 30/01
32-11-00		434	Aug 30/81	32-11-13		403	Mar 30/01
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32-11-00		436	Mar 31/98	32-11-13		405	Mar 30/01
32-11-00		437	Mar 31/98	32-11-27		101	Mar 31/00
32-11-00		438	Nov 30/85	32-11-27		102	Mar 31/00
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32-11-00		440	Nov 30/85	32-11-27		104	Aug 30/78
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32-11-00		442	Sep 30/86	32-11-27		106	Aug 30/78
32-11-00		601	Mar 30/01	32-11-27		107	Aug 30/78
32-11-00		602	Mar 30/01	32-11-27		301	Feb 28/78
32-11-00		603	Mar 30/01	32-11-27		302	Feb 28/78
32-11-00		604	Mar 30/01	32-11-27		303	Aug 30/78
32-11-00		605	Mar 30/01	32-11-27		304	Feb 28/78
32-11-00		606	Mar 30/01	32-11-27		305	Aug 30/78
32-11-00		607	Mar 30/01	32-11-27		306	Feb 28/78
32-11-00		608	Mar 30/01	32-11-27		307	Feb 28/78

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
32-11-27		308	Nov 30/83	32-11-27		611	Feb 28/78
32-11-27		309	Feb 28/78	32-11-27		612	Feb 28/78
32-11-27		310	Aug 30/78	32-11-27		613	Aug 30/78
32-11-27		311	Feb 28/78	32-11-27		614	Aug 30/78
32-11-27		312	Aug 30/78	32-11-27		615	Nov 30/79
32-11-27		313	Aug 30/78	32-11-27		616	Nov 30/79
32-11-27		314	Feb 28/78	32-11-27		617	Nov 30/79
32-11-27		315	Nov 30/79	32-11-27		618	Nov 30/79
32-11-27		316	Nov 30/79	32-11-27		619	Aug 30/78
32-11-27		317	Nov 30/79	32-11-27		620	Aug 30/78
32-11-27		318	Nov 30/79	32-11-27		621	Aug 30/78
32-11-27		319	Aug 30/78	32-11-28		401	Nov 30/75
32-11-27		320	Aug 30/78	32-11-28		402	Nov 30/84
32-11-27		321	Aug 30/78	32-11-28		403	Sep 30/87
32-11-27		322	Nov 30/79	32-11-28		404	Nov 30/84
32-11-27		323	Mar 31/98	32-11-28		404 A	Nov 30/84
32-11-27		324	Nov 30/79	32-11-28		405	May 30/76
32-11-27		325	Mar 31/98	32-11-28		406	May 30/76
32-11-27		326	Nov 30/79	32-11-28		407	Nov 30/84
32-11-27		327	Nov 30/79	32-11-28		408	Nov 30/84
32-11-27		328	Nov 30/79	32-11-28		409	Nov 30/84
32-11-27		329	Nov 30/79	32-11-28		410	Nov 30/84
32-11-27		330	Nov 30/79	32-11-28		411	Mar 31/99
32-11-27		401	Aug 30/78	32-11-28		412	Mar 31/99
32-11-27		402	Aug 30/78	32-11-29		401	Feb 28/81
32-11-27		403	Sep 30/87	32-11-29		402	Nov 30/80
32-11-27		404	Feb 29/80	32-11-29		403	May 30/76
32-11-27		405	Feb 29/80	32-11-29		404	Sep 30/87
32-11-27		406	Nov 30/77	32-11-29		405	May 30/80
32-11-27		407	May 30/77	32-11-29		406	May 30/80
32-11-27		408	Feb 29/80	32-11-29		407	May 30/80
32-11-27		409	Feb 29/80	32-11-29		408	May 30/80
32-11-27		410	May 30/77	32-11-29		409	May 30/80
32-11-27		411	Feb 28/81	32-11-29		501	May 30/76
32-11-27		412	Feb 28/81	32-11-29		502	Nov 30/77
32-11-27		413	Feb 28/81	32-11-29		503	Jun 30/75
32-11-27		414	Mar 29/96	32-11-29		504	Jun 30/75
32-11-27		415	Mar 29/96	32-11-29		505	May 30/76
32-11-27		416	Mar 29/96	32-11-29		506	May 30/76
32-11-27		601	Feb 28/78	32-11-29		507	May 30/76
32-11-27		602	Nov 30/79	32-11-29		508	May 30/76
32-11-27		603	Nov 30/79	32-11-29		509	May 30/76
32-11-27		604	Feb 28/78	32-11-31	01	301	May 30/78
32-11-27		605	Sep 29/89	32-11-31	01	302	May 30/78
32-11-27		605 A	Sep 29/89	32-11-31	01	303	May 30/78
32-11-27		606	Aug 30/78	32-11-31	01	304	May 30/78
32-11-27		607	Aug 30/78	32-11-31	01	305	May 30/78
32-11-27		608	Feb 28/78	32-11-31	01	306	May 30/78
32-11-27		609	Aug 30/78	32-11-31	01	307	May 30/78
32-11-27		610	Feb 28/78	32-11-31	01	308	Feb 28/78

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
32-11-31	01	309	Feb 28/78	32-11-31	01	602	May 30/78
32-11-31	01	310	Feb 28/78	32-11-31	01	603	Feb 28/78
32-11-31	01	311	Feb 28/78	32-11-31	01	604	Feb 28/78
32-11-31	01	312	Feb 28/78	32-11-31	01	605	Feb 28/78
32-11-31	01	313	Feb 28/78	32-11-31	01	606	May 30/78
32-11-31	01	314	Feb 28/78	32-11-31	01	607	May 30/78
32-11-31	01	315	Feb 28/78	32-11-31	01	608	Feb 28/78
32-11-31	01	316	Feb 28/78	32-11-31	01	609	Feb 28/78
32-11-31	02	301	May 30/78	32-11-31	01	610	Feb 28/78
32-11-31	02	302	Feb 28/78	32-11-31	02	601	May 30/78
32-11-31	02	303	Feb 28/78	32-11-31	02	602	May 30/78
32-11-31	02	304	Feb 28/78	32-11-31	02	603	Feb 28/78
32-11-31	02	305	May 30/78	32-11-31	02	604	Feb 28/78
32-11-31	02	306	May 30/78	32-11-31	02	605	Feb 28/78
32-11-31	02	307	Feb 28/78	32-11-31	02	606	May 30/78
32-11-31	02	308	Feb 28/78	32-11-31	02	607	May 30/78
32-11-31	02	309	Feb 28/78	32-11-31	02	608	Feb 28/78
32-11-31	02	310	Feb 28/78	32-11-31	02	609	Feb 28/78
32-11-31	02	311	Sep 30/93	32-11-31	02	610	Feb 28/78
32-11-31	02	312	Sep 30/93	32-11-32		401	Sep 30/88
32-11-31	02	313	Sep 30/93	32-11-32		402	May 30/77
32-11-31	02	314	Sep 30/93	32-11-32		403	Sep 30/87
32-11-31	02	315	Feb 28/78	32-11-32		404	May 30/76
32-11-31	02	316	Feb 28/78	32-11-32		405	Mar 31/98
32-11-31		401	Sep 30/91	32-11-32		406	Feb 28/77
32-11-31		402	Feb 28/81	32-11-32		407	Aug 30/77
32-11-31		403	Nov 30/80	32-11-34		401	Mar 31/00
32-11-31		404	Nov 30/80	32-11-34		402	Mar 31/00
32-11-31		405	May 30/80	32-11-34		403	Feb 28/81
32-11-31		406	May 30/80	32-11-34		404	Feb 28/81
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32-11-31		410	Feb 29/76	32-11-34		408	Feb 28/81
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32-11-31		412	Feb 28/78	32-11-34		410	Feb 28/81
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32-11-31		416	Feb 28/78	32-11-34		504	Jan 31/91
32-11-31		417	Feb 29/76	32-11-34		505	Jan 31/91
32-11-31		418	Aug 30/76	32-11-34		506	Jan 31/91
32-11-31		419	Feb 28/78	32-11-34		507	Nov 30/79
32-11-31		420	Feb 28/78	32-11-34		508	Jan 31/91
32-11-31		421	Feb 28/78	32-11-34		509	Mar 31/99
32-11-31		422	Feb 28/78	32-11-34		510	Jan 31/91
32-11-31		423	Feb 28/78	32-11-34		511	Jan 31/91
32-11-31		424	Feb 28/78	32-11-34		512	Jan 31/91
32-11-31		425	Feb 28/78	32-11-34		513	Jan 31/91
32-11-31	01	601	May 30/78	32-11-34		514	Jan 31/91

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
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32-11-34		516	Jan 31/91	32-12-11	R	504	May 31/03
32-11-34		517	Jan 31/91	32-12-11	R	505	May 31/03
32-11-34		518	Jan 31/91	32-12-11	R	506	May 31/03
32-11-34		519	Jan 31/91	32-12-11	N	507	May 31/03
32-11-34		520	Jan 31/91	32-12-11	N	508	May 31/03
32-11-34		521	Jan 31/91	32-12-12		401	Feb 28/81
32-11-34		522	Jan 31/91	32-12-12		402	Mar 31/98
32-11-34		523	Jan 31/91	32-12-12		403	Feb 28/81
32-11-34		524	Jan 31/91	32-12-12		404	Feb 28/81
32-11-34		525	Jan 31/91	32-12-12	R	405	May 31/03
32-11-34		526	Jan 31/91	32-12-12	R	406	May 31/03
32-11-34		527	Jan 31/91	32-12-12	R	407	May 31/03
32-11-35		401	May 30/76	32-12-12	R	408	May 31/03
32-11-35		402	May 30/76	32-12-12		408A	Mar 31/98
32-11-35		403	Feb 28/81	32-12-12		408B	Mar 31/98
32-31-35		404	Nov 30/75	32-12-12		409	Mar 31/98
32-11-35		405	Feb 28/81	32-12-12		410	Mar 31/98
32-11-35		406	Feb 28/81	32-12-12		411	Feb 28/81
32-11-35		407	Feb 28/81	32-12-12		412	Feb 28/81
32-11-35		601	Feb 28/81	32-12-12		413	Feb 28/81
32-11-35		602	Feb 28/81	32-12-12		414	Feb 28/81
32-11-35		603	Feb 28/81	32-12-12		415	Feb 28/81
32-11-35		604	Nov 30/75	32-12-12		416	Feb 28/81
32-11-35		605	Feb 28/81				
32-11-35		606	Feb 28/81	32-20-00		1	Aug 30/75
32-11-38		401	Feb 28/81	32-20-00		2	Feb 29/76
32-11-38		402	Feb 28/81	32-20-00		3	Aug 30/75
32-11-38		403	Sep 30/93	32-20-00		601	Feb 28/81
32-11-38		404	Aug 30/75	32-20-00		602	Feb 28/81
32-11-38		405	Aug 30/75	32-20-00		603	Feb 28/81
32-11-38		406	Feb 28/81	32-20-00		604	Feb 28/81
32-11-38		407	Jun 30/75	32-20-00		605	Feb 28/81
32-11-38		408	Feb 28/81				
32-11-38		409	Feb 28/81	32-21-00		1	Feb 29/76
32-11-38		410	Feb 28/81	32-21-00		2	Aug 30/75
				32-21-00		3	Feb 29/76
32-12-00	R	1	May 31/03	32-21-00		4	Feb 29/76
32-12-00	R	2	May 31/03	32-21-00		5	Aug 30/75
32-12-00	R	3	May 31/03	32-21-00		6	Feb 29/76
32-12-11		401	Feb 28/81	32-21-00		7	Nov 30/79
32-12-11		402	Feb 28/81	32-21-00		401	Feb 28/81
32-12-11		403	Feb 28/81	32-21-00		402	Feb 28/81
32-12-11		404	Mar 27/97	32-21-00		403	Feb 28/81
32-12-11		405	Feb 28/81	32-21-00		404	Feb 28/81
32-12-11		406	Feb 28/81	32-21-00		405	Feb 28/81
32-12-11		407	Mar 27/97	32-21-00		406	Feb 28/81
32-12-11		408	Mar 27/97	32-21-00		407	Aug 30/77
32-12-11	R	501	May 31/03	32-21-00		408	Feb 28/81
32-12-11	R	502	May 31/03	32-21-00		409	Nov 30/80

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
32-21-00		410	Feb 28/81	32-21-24		326	Sep 30/91
32-21-00		411	Feb 28/81	32-21-24		327	Sep 30/91
32-21-00		412	Sep 30/86	32-21-24		401	Feb 28/81
32-21-00		413	Sep 29/89	32-21-24		402	Feb 28/81
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32-21-00		504	Jun 30/75	32-21-24		406	Nov 30/80
32-21-00		601	May 30/76	32-21-24		407	Feb 28/81
32-21-00		602	May 30/76	32-21-24		408	Feb 28/81
32-21-00		603	Feb 28/81	32-21-24		409	Feb 28/81
32-21-00		604	May 30/76	32-21-24	R	410	May 31/03
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32-21-00		606	Nov 30/80	32-21-24		412	Feb 28/81
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32-21-24		311	Feb 29/76	32-22-11	01	405	Jan 31/91
32-21-24		312	Nov 30/75	32-22-11	01	406	Jan 31/91
32-21-24		313	Jun 30/75	32-22-11	01	407	Jan 31/91
32-21-24		314	Nov 30/75	32-22-11	01	408	Jan 31/91
32-21-24		315	Feb 29/76	32-22-11	01	409	Jan 31/91
32-21-24		316	Nov 30/75	32-22-11	01	410	Jan 31/91
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32-21-24		323	Nov 30/84	32-22-11	02	407	Jan 31/91
32-21-24		324	Nov 30/80	32-22-11	02	408	Jan 31/91
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32-31-14	01	406	Jan 31/91	32-31-15		606	Nov 30/80
32-31-14	01	407	Jan 31/91	32-31-15		607	Feb 28/81
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32-31-14	01	409	Jan 31/91	32-31-17		402	Feb 28/81
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32-31-14	02	405	Jan 31/91	32-31-21		401	Feb 28/81
32-31-14	02	406	Jan 31/91	32-31-21		402	Feb 28/81
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32-31-14	02	414	Jan 31/91	32-31-21		410	Nov 30/80
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32-31-15		412	Nov 30/79	32-31-24		502	Feb 28/81
32-31-15		413	May 30/80	32-31-24		503	Nov 30/80
32-31-15		414	May 30/77	32-31-24		504	Nov 30/80
32-31-15		415	Nov 30/80	32-31-24		505	Nov 30/80
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32-31-15		418	May 30/80	32-31-26		403	Jan 31/91
32-31-15		419	Nov 30/79	32-31-26		404	Jan 31/91
32-31-15		420	Feb 28/78	32-31-26		405	Nov 30/77
32-31-15		421	Nov 30/80	32-31-27		401	Feb 29/76

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32-31-28		407	Sep 30/91	32-31-61		404	Jan 31/91
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32-31-28		409	Nov 30/81	32-31-62		402	Mar 31/98
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32-31-28		603	Jun 30/71	32-31-62		509	Mar 31/98
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32-31-33		401	Feb 28/81	32-31-64		403	Feb 28/81
32-31-33		402	Feb 28/81	32-31-64		404	Nov 30/80
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32-31-68		401	Feb 28/81	32-31-82		507	Feb 28/78
32-31-68		402	Feb 28/81	32-31-91		401	Feb 28/77
32-31-68		403	Feb 28/81	32-31-91		402	Nov 30/82
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32-31-68		410	Feb 28/81	32-31-92		402	May 30/76
32-31-68		411	Feb 28/81	32-31-92		403	May 30/76
32-31-71		401	Feb 28/81	32-31-92		404	Sep 30/91
32-31-71		402	Feb 28/81	32-31-92		405	Feb 28/78
32-31-71		403	Feb 28/81	32-31-92		406	May 30/76

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32-31-92		507	Mar 31/98	32-32-00		6	Mar 31/98
32-31-92		508	Mar 31/98	32-32-00		7	Nov 30/83
32-31-93		401	Feb 28/78	32-32-00		8	Nov 30/83
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32-31-93		408	Aug 30/78	32-32-00		15	Nov 30/83
32-31-94		401	Feb 28/81	32-32-00		16	Nov 30/83
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32-31-95		401	Feb 28/81	32-32-00		22	Nov 30/83
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32-31-95	02	502	Jan 31/91	32-32-00		112	Feb 28/77
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32-31-96		403	Nov 30/83	32-32-00		503	Feb 28/81
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32-31-96		405	Nov 30/83	32-32-00		505	Nov 30/80
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32-31-96		407	Sep 30/87	32-32-00		507	Feb 28/81
32-31-96		408	Sep 30/87	32-32-00		508	Feb 28/81
32-31-96		409	Sep 30/87	32-32-00		509	Feb 28/81

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32-32-13		404	Mar 31/98	32-33-00		514 B	May 30/82
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32-32-13		601	Feb 28/81	32-33-00		517	May 30/81
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32-32-51		402	Feb 28/81	32-33-00		603	Nov 30/83
32-32-51		403	Feb 28/81	32-33-00		604	Nov 30/83
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32-32-51		406	Feb 28/81	32-33-12		403	Nov 30/80
				32-33-12		404	Mar 31/98

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32-33-21		503	Feb 28/81	32-42-00		306	Mar 31/98
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32-33-22		406	Mar 31/98	32-42-11	01	407	Mar 31/98
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32-40-00		2	Mar 31/98	32-42-11	01	604	May 30/80
32-40-00		3	Mar 31/98	32-42-11	01	605	Mar 31/99
32-40-00		4	Mar 31/98	32-42-11	01	606	Mar 31/99
32-40-00		5	Mar 31/98	32-42-21		401	Mar 31/99
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32-41-00		3	Nov 30/77	32-42-21		405	Mar 31/99
32-41-00		4	Aug 30/76	32-42-21		406	Mar 31/99

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32-42-21		602	Feb 29/76	32-43-00		48	Mar 31/98
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32-43-00		10	Mar 31/98	32-43-00		105	Aug 30/77
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32-43-00		41	Mar 31/98	32-43-00		136	Sep 30/87
32-43-00		42	Mar 31/98	32-43-00		137	Nov 30/81
32-43-00		43	Mar 31/98	32-43-00		138	Nov 30/81
32-43-00		44	Mar 31/98	32-43-00		139	Nov 30/81

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32-43-00		142	Nov 30/81	32-43-00	01	517	Nov 30/81
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32-43-00		144	Nov 30/81	32-43-00	01	519	Mar 31/98
32-43-00		145	Nov 30/81	32-43-00	01	520	Mar 31/98
32-43-00		146	Nov 30/81	32-43-00	01	521	Mar 31/00
32-43-00		147	Nov 30/84	32-43-00	01	522	Mar 31/00
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32-43-00		155	Nov 30/81	32-43-00	01	530	May 30/80
32-43-00		156	Nov 30/81	32-43-00	01	531	Mar 31/98
32-43-00		156A	Sep 30/87	32-43-00	01	532	Mar 31/98
32-43-00		156B	Mar 31/98	32-43-00	01	533	Mar 31/98
32-43-00		157	Nov 30/81	32-43-00	01	534	Sep 30/87
32-43-00		158	Nov 30/81	32-43-00	01	535	Nov 30/81
32-43-00		159	Nov 30/81	32-43-00	01	536	Nov 30/81
32-43-00		160	Nov 30/81	32-43-00	01	537	Sep 30/87
32-43-00		161	Mar 27/97	32-43-00	01	538	Sep 30/87
32-43-00		162	Mar 27/97	32-43-00	01	539	Sep 30/87
32-43-00		163	Nov 30/81	32-43-00	01	540	Sep 30/87
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32-43-00	01	501	Feb 28/81	32-43-00	01	549	Mar 31/98
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32-43-00	01	503	Feb 28/81	32-43-00	01	551	Sep 30/87
32-43-00	01	504	Nov 30/80	32-43-00	01	552	Sep 30/87
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32-43-00	01	508	Mar 31/98	32-43-00	01	556	Sep 30/87
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32-43-00	01	513	Mar 31/98	32-43-00	01	561	Mar 31/98
32-43-00	01	514	Sep 30/87	32-43-00	01	562	Sep 30/87
32-43-00	01	515	Aug 30/80	32-43-00	01	563	Mar 31/98
32-43-00	01	516	Mar 31/98	32-43-00	01	564	Mar 31/98

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32-43-00	01	567	Sep 30/87	32-43-51		403	Mar 29/96
32-43-00	01	568	Sep 30/87	32-43-51		404	Mar 29/96
32-43-00	01	569	Sep 30/87	32-43-53		401	May 30/76
32-43-00	01	570	Sep 30/87	32-43-53		402	May 30/76
32-43-31		401	Sep 30/87	32-43-53		403	May 30/76
32-43-31		402	Mar 31/98	32-43-54		401	Sep 30/87
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32-43-32		401	Sep 30/87	32-43-54		404	Aug 30/76
32-43-32		402	May 30/76	32-43-56		401	Sep 30/87
32-43-32		403	Jun 30/75	32-43-56		402	Sep 30/87
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32-43-32		405	Nov 30/83	32-43-56		404	May 30/76
32-43-32		406	Nov 30/84	32-43-57		401	Sep 30/87
32-43-34		401	Feb 28/77	32-43-57		402	Mar 29/96
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32-43-35		402	Nov 30/77	32-43-61		401	Nov 30/81
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32-43-35		404	Nov 30/77	32-43-61		403	Nov 30/81
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32-43-41		403	Mar 31/98	32-43-63		404	Nov 30/80
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32-43-42		304	Feb 28/77	32-43-63		504	Aug 30/76
32-43-42		305	Feb 28/77	32-43-64		401	Aug 30/81
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32-43-45		402	Sep 30/87	32-43-64		405	Aug 30/76
32-43-45		403	Nov 30/80	32-43-65		401	May 30/77
32-43-45		404	Nov 30/80	32-43-65		402	Sep 30/87
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32-43-46		402	Mar 27/97	32-43-65		404	May 30/77
32-43-46		403	Nov 30/80	32-43-65		405	May 30/77
32-43-46		404	Feb 28/81	32-43-66		401	Sep 30/93
32-43-46		501	Feb 28/81	32-43-66		402	Sep 30/93
32-43-46		502	Mar 27/97	32-43-66		403	Sep 30/93
32-43-46		503	Feb 28/81	32-43-66		404	Sep 30/93

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32-44-00		3	Nov 30/75	32-44-00		507	Feb 28/81
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32-44-00		5	Feb 28/77	32-44-00		509	Sep 30/87
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32-44-00		12	Feb 28/77	32-44-00		516	Nov 30/84
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32-44-00		14	Feb 28/77	32-44-00		516 B	Mar 31/99
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32-44-00		101	Mar 31/00	32-44-00		519	Nov 30/80
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32-44-00		105	Feb 29/76	32-44-00		523	Mar 31/99
32-44-00		106	Feb 29/76	32-44-00		524	Mar 31/99
32-44-00		107	Feb 29/76	32-44-00		525	Mar 31/99
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32-44-00		501	Feb 28/81	32-44-41		404	Nov 30/80
32-44-00		502	Nov 30/80	32-44-41		405	Feb 28/81
32-44-00		503	Feb 28/81	32-44-41		406	Feb 28/81

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32-44-61		404	May 30/76	32-45-00		9	Feb 28/77
32-44-61		405	May 30/76	32-45-00		10	Feb 28/77
32-44-61		406	May 30/76	32-45-00		11	Feb 28/77
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32-44-61		408	May 30/76	32-45-00		102	May 30/76
32-44-63		401	Aug 30/81	32-45-00		103	May 30/76
32-44-63		402	Nov 30/81	32-45-00		104	May 30/76
32-44-63		403	Nov 30/81	32-45-00		501	Feb 28/77
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32-44-92		401	Aug 30/81	32-46-00		306	Feb 28/81
32-44-92		402	May 30/76	32-46-00		501	Feb 28/81
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32-44-92		404	May 30/76	32-46-00		503	Nov 30/80
				32-46-00		504	Nov 30/80
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32-45-00		4	May 30/76	32-47-00		3	Feb 29/76

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32-47-00		103	Feb 29/76	32-48-00		26	Nov 30/82
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32-47-11		501	May 30/77	32-48-00		108	May 30/81
32-47-11		502	May 30/77	32-48-00		109	May 30/81
32-47-12		401	May 30/77	32-48-00		110	Nov 30/81
32-47-12		402	May 30/77	32-48-00		111	Nov 30/81
32-47-12		403	May 30/77	32-48-00		112	Nov 30/81
32-47-12		404	May 30/77	32-48-00		113	Nov 30/81
32-47-12		405	May 30/77	32-48-00		114	Nov 30/81
32-47-12		601	May 30/77	32-48-00		115	Nov 30/81
32-47-12		602	Feb 28/81	32-48-00		116	Nov 30/81
32-47-12		603	Feb 28/81	32-48-00		117	Nov 30/81
				32-48-00		118	Nov 30/81
32-48-00		1	Nov 30/81	32-48-00		119	Nov 30/81
32-48-00		2	May 30/81	32-48-00		120	Nov 30/81
32-48-00		3	Nov 30/82	32-48-00		121	Nov 30/81
32-48-00		4	May 30/81	32-48-00		122	Nov 30/81
32-48-00		5	May 30/81	32-48-00		123	Nov 30/81
32-48-00		6	May 30/81	32-48-00		124	Nov 30/81
32-48-00		7	May 30/81	32-48-00		125	Nov 30/81
32-48-00		8	Nov 30/82	32-48-00		126	Nov 30/81
32-48-00		8A	Nov 30/82	32-48-00		127	Nov 30/81
32-48-00		8B	Nov 30/82	32-48-00		128	Nov 30/81
32-48-00		9	Nov 30/82	32-48-00		129	Nov 30/81
32-48-00		10	Nov 30/82	32-48-00		501	Nov 30/81
32-48-00		11	Nov 30/82	32-48-00		502	Mar 27/97
32-48-00		12	Nov 30/82	32-48-00		503	Jan 31/91
32-48-00		13	Nov 30/82	32-48-00		504	Nov 30/82
32-48-00		14	May 30/84	32-48-00		505	Nov 30/82
32-48-00		15	Nov 30/82	32-48-00		506	Nov 30/82
32-48-00		16	Nov 30/81	32-48-00		507	Mar 31/00
32-48-00		17	Mar 31/00	32-48-00		508	Mar 31/00
32-48-00		18	Mar 31/00	32-48-00		509	Sep 30/87
32-48-00		19	Mar 31/00	32-48-00		510	Mar 27/97
32-48-00		20	Mar 31/00	32-48-00		511	Jan 31/91
32-48-00		21	Mar 31/00	32-48-00		512	Nov 30/82
32-48-00		22	Mar 31/00	32-48-00		513	Nov 30/81

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32-48-00		514	Nov 30/82	32-51-00		20	Feb 29/76
32-48-00		515	Sep 30/87	32-51-00		21	Feb 29/76
32-48-00		516	Mar 27/97	32-51-00		22	Feb 29/76
32-48-00		517	Nov 30/85	32-51-00		23	Feb 29/76
32-48-00		518	Jan 31/91	32-51-00		24	Feb 29/76
32-48-00		519	Nov 30/82	32-51-00		25	Feb 29/76
32-48-00		520	Nov 30/82	32-51-00		26	Feb 29/76
32-48-00		521	Nov 30/82	32-51-00		27	Feb 29/76
32-48-00		522	Nov 30/82	32-51-00		28	Feb 29/76
32-48-00		523	Jan 31/91	32-51-00		20	Feb 29/76
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32-48-00		801	May 30/83	32-51-00		104	Feb 29/76
32-48-00		802	May 30/83	32-51-00		105	Nov 30/75
32-48-00		803	May 30/83	32-51-00		106	Feb 29/76
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32-48-00		810	May 30/83	32-51-00		113	May 30/76
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32-51-00		13	Feb 29/76	32-51-00		515	Aug 30/76
32-51-00		14	Feb 29/76	32-51-00		516	Feb 29/76
32-51-00		15	Feb 29/76	32-51-00		517	Feb 29/76
32-51-00		16	Feb 29/76	32-51-00		518	Feb 29/76
32-51-00		17	Feb 29/76	32-51-00		519	Nov 30/80
32-51-00		18	Feb 29/76	32-51-00		520	Nov 30/80
32-51-00		10	Feb 29/76	32-51-00		521	Feb 28/81

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
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32-51-00		523	Feb 28/81	32-51-52		604	Feb 28/81
32-51-00		524	Aug 30/76	32-51-56		401	Feb 28/81
32-51-00		525	Aug 30/76	32-51-56		402	Feb 28/81
32-51-00		526	Feb 29/76	32-51-56		403	Jan 31/91
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32-51-32		402	May 30/76	32-51-62		404	Jun 30/75
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32-51-36		403	Aug 30/78	32-61-00		8	Feb 28/81
32-51-36		404	Aug 30/78	32-61-00		9	Jan 31/91
32-51-51		401	Feb 28/81	32-61-00		10	Feb 28/81
32-51-51		402	Feb 28/81	32-61-00		11	Nov 30/80
32-51-51		403	Feb 28/81	32-61-00		12	Feb 28/81
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31-51-51		405	Feb 28/81	32-61-00		14	Nov 30/80
32-51-52		301	Feb 28/81	32-61-00		15	Jan 31/91
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32-51-52		304	Nov 30/76	32-61-00		103	Feb 28/77
32-51-52		305	Nov 30/80	32-61-00		104	Feb 28/77
32-51-52		306	Feb 28/81	32-61-00		105	Feb 28/77
32-51-52		601	May 30/81	32-61-00		106	Feb 28/77
32-51-52		602	Feb 28/81	32-61-00		107	Feb 28/77

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32-61-00		109	May 30/77	32-61-00		159	Nov 30/78
32-61-00		110	Feb 28/77	32-61-00		160	Nov 30/78
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32-61-00		114	Feb 28/77	32-61-00		164	Nov 30/78
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32-61-00		139	Jan 31/91	32-61-00		523	Jan 31/91
32-61-00		140	Jan 31/91	32-61-00		524	Jan 31/91
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32-61-00		151	Feb 28/77	32-61-12		403	May 30/76
32-61-00		152	Feb 29/80	32-61-13		401	May 30/76
32-61-00		153	Feb 29/80	32-61-13		402	May 30/76
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32-61-00		155	Feb 29/80	32-61-14		401	Jan 31/91
32-61-00		156	Feb 29/80	32-61-14		402	Jan 31/91
32-61-00		157	Nov 30/78	32-61-14		403	Jan 31/91

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32-71-24		303	Jun 30/75
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32-71-24		305	May 30/76
32-71-24		401	Nov 30/81
32-71-24		402	Nov 30/81
32-71-24		403	Nov 30/81
32-71-24		404	Nov 30/81
32-71-24		405	Nov 30/81
32-71-24		406	Nov 30/81
32-71-24		601	May 30/76
32-71-24		602	Jun 30/75
32-71-24		603	May 30/76

SERVICE BULLETIN LIST

In the following service bulletin list, SB indicates an aircraft manufacturers bulletin, AEB indicates an airline engineering bulletin and OL indicates an engine manufacturers bulletin (complete identification OL.593-XX-XXX).

	SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
	AEBAF323044			Not applicable
	SB 28-012		Feb 28/77	Embodied Fuel. FQI -Clearance of aft take-off C of G to increase fuel load and to install a revised standard of standby C.G. pack
	SB 29-003		Nov 30/76	Embodied Hydraulic power -Replacement of A.P.M. clogging indicators on HP filters and pump case drains.
	SB 29-034		Aug 30/79	Embodied Hydraulic Power. Landing Gear Emergency Extension - Reduce rating of yellow hydraulic system priority valve
R	SB 32A011			Embodied
	SB 32-A-076		Feb 29/80	Embodied
R	SB 32-A-076	01	Nov 30/83	Embodied
R	SB 32-A-076	02	Nov 30/83	Embodied
R	SB 32A089			No effect
	SB 32-001		May 30/77	Embodied Landing gear -Modification to ground safety system for the nose landing gear telescopic strut.
	SB 32-001	01		No effect Landing gear -Modification to ground safety system for the nose landing gear telescopic strut.
	SB 32-001	02		No effect Landing gear -Modification to ground safety system for the nose landing gear telescopic strut.
	SB 32-002			No effect Landing gear -Reinforcement of main landing gear timing valve body
	SB 32-002	01		No effect Landing gear -Reinforcement of main landing gear timing valve body
	SB 32-002	02		No effect Landing gear -Reinforcement of main landing gear timing valve body
	SB 32-002	03		No effect Landing gear -Reinforcement of main landing gear timing valve body
	SB 32-003		Feb 28/77	Embodied

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			Landing gear -Change of main landing gear wheel fusible plugs
SB 32-003	01		No effect Landing gear -Change of main landing gear wheel fusible plugs
SB 32-003	02		No effect Landing gear - Change of main landing gear wheel fusible plugs
SB 32-003	03		No effect Landing gear - Change of main landing gear wheel fusible plugs
SB 32-004		Nov 30/76	Embodied Main landing gear -To improve installation of the front main landing gear deflector
SB 32-004	01		No effect Main landing gear -To improve installation of the front main landing gear deflector
SB 32-004	02		No effect Main landing gear -To improve installation of the front main landing gear deflector
SB 32-004	03		No effect Main landing gear - To improve installation of the front main landing gear deflector
SB 32-005			No effect Landing gear -Safetying of backshell connector onto brake fan harness push-pull plug inside wheel axle
SB 32-005	01		No effect Landing gear -Safetying of backshell connector onto brake fan harness push-pull plug inside wheel axle
SB 32-006			Not applicable
SB 32-006	01		Not applicable
SB 32-007		May 30/77	Embodied Landing gear -Modification to the main landing gear information logic on the ground
SB 32-007	01		No effect Landing gear -Modification to the main landing gear information logic on the ground
SB 32-007	02		No effect Landing gear -Modification to the main landing gear information logic on the

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			ground
SB 32-007	03		No effect Landing gear -Modification to the main landing gear information logic on the ground
SB 32-008			No effect Landing gear : Normal braking system -Drift checking on brake torque arm strain gauges.
SB 32-008	01		No effect Landing gear : Normal braking system -Drift checking on brake torque arm strain gauges.
SB 32-009		May 30/77	Embodied Landing gear -Replacement of the provisional brake adapter unit
SB 32-009	01		No effect Landing gear -Replacement of the provisional brake adapter unit
SB 32-009	02		No effect Landing gear -Replacement of the provisional brake adapter unit
SB 32-010			No effect Landing gear -Modification to the brake torque arm strain gauge installation.
SB 32-010	01		No effect Landing gear -Modification to the brake torque arm strain gauge installation.
SB 32-011		Feb 28/77	Embodied
SB 32-012		May 30/77	Embodied Landing gear -Improvement to the brake signal adapter unit.
SB 32-012	01		No effect Landing gear -Improvement to the brake signal adapter unit.
SB 32-012	02		Embodied Landing Gear - Improvement to the brake signal adapter unit
R SB 32-012	03		No effect Landing Gear - Improvement to the brake signal adapter unit
SB 32-013		Feb 28/77	Embodied Landing gear -Improved resistance of the Dunlop carbon brake temperature sensors.
SB 32-013	01		No effect Landing gear -Improved resistance of the

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			Dunlop carbon brake temperature sensors.
SB 32-013	02	May 30/77	Embodied
			Landing gear -Improved resistance of the Dunlop carbon brake temperature sensors.
SB 32-014		May 30/77	Embodied
			Landing gear -Dunlop main landing gear wheels increased number of fusible plugs
SB 32-014	01		No effect
			Landing gear -Dunlop main landing gear wheels increased number of fusible plugs
SB 32-014	02		No effect
			Landing gear -Dunlop main landing gear wheels increased number of fusible plugs
SB 32-014	03		No effect
			Landing gear -Dunlop main landing gear wheels increased number of fusible plugs
SB 32-014	04		No effect
			Landing gear -Dunlop main landing gear wheels increased number of fusible plugs
SB 32-015			No effect
			Landing gear. Nose Landing Gear Uplock Jack To change return port elbow
SB 32-016			No effect
			Landing gear -Nose gear water deflector installation
SB 32-016	01		No effect
			Landing gear -Nose gear water deflector installation
SB 32-016	02		No effect
			Landing gear -Nose gear water deflector installation
SB 32-016	03		No effect
			Landing gear -To facilitate withdrawal of locking pin from ultimate emergency control bellcrank
SB 32-017			No effect
			Landing gear -To facilitate withdrawal of locking pin from ultimate emergency control bellcrank
SB 32-018		May 30/77	Embodied
			Landing gear -Main gear telescopic brace strut pressurization system valve-safetying with snapwire
SB 32-018	01		No effect
			Landing gear -Main gear telescopic brace

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			strut pressurization system valve-safetying with snapwire
SB 32-019			No effect Landing gear -Reinforcement to nose gear deflector plate assy
SB 32-019	01		No effect Landing gear -Reinforcement to nose gear deflector plate assy
SB 32-019	02		No effect Landing gear -Reinforcement to nose gear deflector plate assy
SB 32-020		May 30/77	Embodied Landing gear -Improved grounding of air-craft during ground servicing
SB 32-020	01		No effect Landing gear -Improved grounding of air-craft during ground servicing
SB 32-020	02		Embodied Landing gear -Improved grounding of air-craft during ground servicing
SB 32-021			No effect Landing gear-Tail Landing Gear Shock Absor-ber -Replace French charging and filling point labels by French/English Labels
SB 32-021	01		Embodied Landing gear-Tail Landing Gear Shock Absor-ber -Replace French charging and filling point labels by French/English Labels
SB 32-022			No effect Landing gear-Ultimate Emergency Extension - Modification to nose gear dual LH main gear triple and RH main gear triple with depres-surization valves
SB 32-022	01		No effect Landing gear-Ultimate emergency extension - Modification to nose gear dual LH main gear triple and RH main gear triple with depres-surization valves
SB 32-023			No effect Landing gear -Modification to the landing gear emergency selector valve control lever
SB 32-023	01		No effect Landing gear - Modification to the landing gear emergency selector valve control level

SERVICE BULLETIN LIST

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
SB 32-024			No effect Landing gear -Improvements to base plates - Nose and Main landing gears(MESSIER HISPANO SB 072-32-007 and 072-32-008)
SB 32-024	01		No effect Landing gear - Improvements to base plates - Nose and main landing gears
SB 32-024	02		No effect Landing gear - Improvements to base plates - Nose and main landing gears
SB 32-025			No effect Landing gear -Nose landing gear telescopic drag strut: New definition of lower and rod bearing locking system protective sleeves
SB 32-025	01		No effect Landing gear -Nose landing gear telescopic drag strut: New definition of lower and rod bearing locking system protective sleeves
SB 32-026			No effect Landing Gear - Improvements to the sealing of the main and nose landing gear swivel joints
SB 32-027			No effect Landing gear -To prevent incorrect insta-llation of nose landing gear deflectors
SB 32-027	01		No effect Landing gear -To prevent incorrect insta-llation of nose landing gear deflectors
SB 32-028			No effect Landing gear -Check of nose landing gear telescopic drag strut protection sleeves
SB 32-028	01		No effect Landing gear -Check of nose landing gear telescopic drag strut protection sleeves
SB 32-029			No effect Landing gear -Tail landing gear : reinfor-ce actuating cylinder body
SB 32-029	01		No effect Landing Gear. Tail Landing Gear - Reinforce actuating cylinder body
SB 32-030			Embodied Landing gear -Main landing gear front deflector -Stowage of lockpin
SB 32-031			No effect

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			Landing gear. LH Main Landing Gear -Modify triple valve rear protective cover
SB 32-032			No effect
			Landing gear. Emergency Extension-To change the standby landing gear selector lever guard
SB 32-033			No effect
			Landing gear -main landing gear bogie beam -increase swivel joint clearance
SB 32-034			No effect
			Landing gear - Reinforce main landing gear lower shortening rod link pins
SB 32-034	01		No effect
			Landing gear - Reinforce main landing gear lower shortening rod link pins
SB 32-034	02		No effect
			Landing gear - Reinforce main landing gear lower shortening rod link pins
SB 32-034	03		No effect
			Landing gear - Reinforce main landing gear lower shortening rod link pins
SB 32-035			No effect
			Landing gear -Application of torque tightening on the attachment screws of brake servo-valve connector cover
SB 32-036			No effect
			Landing gear - Improved method of attachment of lipped seals on main landing gear hinge points (MESSIER HISPANO SB 072-32-027)
SB 32-036	01		No effect
			Landing gear - Improved method of attachment of lipped seals on main landing gear hinge points (MESSIER HISPANO SB 072-32-027)
SB 32-037			No effect
			Landing gear -Nose gear main doors micro-switches -To retain microswitch duct covers and "O"ring seals
SB 32-037	01		No effect
			Landing gear -Nose gear main doors micro-switches -To retain microswitch duct covers and "O"ring seals
SB 32-038			Embodied

SERVICE BULLETIN LIST

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			Landing gear -To increase the operating range of the control switches on nose landing gear damper
SB 32-039			Embodied
			Landing gear -Main landing gear front spherical bearing -Improve lubricator accessibility
SB 32-040			No effect
			Landing gear. Alternative use in brake heat jacks of carbon rayon discs of either US or dunlop manufacture
SB 32-041			No effect
			Landing gear -Main landing gear bogie beam shaft -Recolate lubricators
SB 32-042			No effect
			Landing gear -Locking of brake fan motor stator
SB 32-043			No effect
			Main landing gear -Maintenance checks
SB 32-043	01		No effect
			Main landing gear -Maintenance checks
SB 32-043	02		No effect
			Main Landing Gear - Maintenance Checks. (Addition, deletion and change of frequency of tasks)
SB 32-044			Not applicable
SB 32-044	01		Not applicable
SB 32-045			No effect
			Landing Gear. Main Gear Return and Depressurization Selector Valve Base Plate - Improved sealing of plugs
SB 32-045	01		No effect
			Landing Gear. Main Gear Return and Depressurization Selector Valve Base Plate - Improved sealing of plugs
SB 32-046			Not applicable
SB 32-047		Feb 28/79	Embodied
			Landing Gear. Tail Bumper Mechanism - To strengthen and improve installation in Tail cone
SB 32-047	01		No effect
			Landing Gear. Tail Bumper Mechanism - To strengthen and improve installation in Tail cone

SERVICE BULLETIN LIST

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
SB 32-047	02		No effect Landing Gear. Tail Bumper Mechanism - To strengthen and improve installation in Tail cone
SB 32-047	03		No effect Landing Gear. Tail Bumper Mechanism - To strengthen and improve installation in Tail cone
SB 32-047	04		No effect Landing Gear. Tail Bumper Mechanism - To strengthen and improve installation in Tail cone
SB 32-048			No effect Landing gear - Improvement of main landing gear leg internal oxydation protection (MESSIER HISPANO SB 072-32-014)
SB 32-048	01		No effect Landing gear - Improvement of main landing gear leg internal oxydation protection (MESSIER HISPANO SB 072-32-014)
SB 32-049			No effect Landing Gear - Improvement of sealing of Main Landing Gear shock absorber
SB 32-049	01		No effect Landing Gear - Improvement of sealing of Main Landing Gear shock absorber
SB 32-050			No effect Main landing gear-Increase diameter of holes at either end of slot in door skin
SB 32-051			Embodied Landing gear -Replace single chamber main landing gear shock absorber by two stage shock absorber
SB 32-052			No effect Landing Gear - Modify Nosewheel Steering Control Unit
SB 32-053			Embodied Landing Gear - Application of Dunlop modification C1701 to carbon brakes
SB 32-054			No effect Landing gear. Nose landing gear telescopic drag strut - Install locking doglock bushing with loctite (MESSIER HISPANO SB 072-32-043)

SERVICE BULLETIN LIST

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
SB 32-054	01		No effect Landing gear. Nose landing gear telescopic drag strut - Install locking doglock bush-ing with loctite (MESSIER HISPANO SB 072-32-043)
SB 32-055		May 30/78	Embodied Landing gear-Brakes overload control unit - Improve operation and indicating
SB 32-055	01		No effect Landing gear. Brakes overload control unit-Improve operation and indicating
SB 32-055	02		No effect Landing gear-Brakes overload control unit - Improve operation and indicating
SB 32-055	03		No effect Landing Gear. Brakes Overload Control Unit-Improve operation and indicating
SB 32-055	04		Embodied Landing Gear. Brakes Overload Control Unit-Improve operation and indicating
SB 32-055	05		No effect Landing Gear. Brakes Overload Control Unit-Improve operation and indicating
SB 32-055	06		No effect Landing Gear. Brakes Overload Control Unit-Improve operation and indicating
SB 32-056		May 30/79	Embodied Landing gear - Brakes temp indicator - Increase brake overheat warning threshold from 200 to 220aC
SB 32-057		Aug 30/79	Embodied Landing Gear. Normal Braking - Provide automatic changeover from Green to Yellow Hydraulic system pressure in the event of Green system failure
SB 32-057	01	Aug 30/79	Embodied Landing Gear. Normal Braking - Provide automatic changeover from Green to Yellow Hydraulic system pressure in the event of Green system failure
SB 32-057	02		No effect Landing Gear. Normal Braking - Provide automatic changeover from Green to Yellow Hydraulic system pressure in the

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
			event of Green system failure
SB 32-057	03		No effect Landing Gear. Normal Braking - Provide automatic changeover from Green to Yellow Hydraulic system pressure in the event of Green system failure
SB 32-058			No effect Landing Gear. Main and Nose Landing Gear wheels - Install tachometer generators equipped with pure graphite brushes
SB 32-058	01		No effect Landing Gear. Main and Nose Landing Gear wheels - Install tachometer generators equipped with pure graphite brushes
SB 32-059			No effect Landing Gear. Nose Gear Door Time Valve - Safety bleeder plug with lockwire
SB 32-060			Embodied Main landing gear front deflectors -Modify attaching nut
SB 32-061			No effect Landing gear. Main gear ultimate emergency control -Provide for stowage of locking pins
SB 32-062		Nov 30/78	Embodied Landing gear -Modify main landing gear centre deflector
SB 32-063			Embodied Landing Gear. Nose Undercarriage and Door Uplock Microswitches - Application of silicon grease
SB 32-064			No effect Landing Gear - Modify hydraulic system vent line in RH main landing gear bay to facilitate installation
SB 32-065			No effect Landing Gear. Main Gear Door Uplocks - Replace control piston by an integrally cast piston
SB 32-065	01		No effect Landing Gear. Main Gear Door Uplocks - Replace control piston by an integrally cast piston
SB 32-066		Feb 29/80	Embodied

SERVICE BULLETIN LIST

	SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
				Landing Gear - Nose and Main Landing Gear Hydraulic Systems - Prevent fluid transfer due to thermal expansion
	SB 32-067			No effect
				Landing gear. Emergency braking - To introduce modified master cylinder/header tank hydraulic pipe
	SB 32-068		Feb 29/80	Embodied
				Landing Gear. Tyres - Operational Limitations
	SB 32-068	01		No effect
				Landing Gear. Tyres - Operational Limitations
	SB 32-068	02		No effect
				Landing Gear. Tyres - Operational Limitations
	SB 32-068	03		Embodied
				Landing Gear. Tyres - Operational Limitations
	SB 32-068	04		Embodied
				Landing Gear. Tyres - Operational Limitations
	SB 32-068	05	Aug 30/80	Embodied
				Landing Gear. Tyres - Operational Limitations
R	SB 32-068	06	Nov 30/83	Embodied
	SB 32-069			No effect
				Landing Gear - Replace coils in brake servovalves to improve reliability
	SB 32-069	01		No effect
				Landing Gear - Replace coils in brake servovalves to improve reliability
	SB 32-070			No effect
				Landing Gear - Nose wheel Steering Hydraulic Selector - Limit Slide valve travel
	SB 32-070	01		No effect
				Landing Gear - Nose wheel Steering Hydraulic Selector - Limit Slide valve travel
	SB 32-071			Not applicable
	SB 32-072			Not applicable
	SB 32-073		Nov 30/79	Embodied
				Landing Gear. Braking - Add NRV in normal braking yellow return line
	SB 32-073	01		No effect

SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
SB 32-073	02		No effect Landing Gear. Braking - Add NRV in normal braking yellow return line
SB 32-074			No effect Landing Gear - Emergency Braking System - Header tank to master cylinder piping
SB 32-075			No effect Landing Gear. Nose Landing Gear Axle - Improve resistance to fretting
SB 32-077			Not applicable
SB 32-078		Aug 30/81	Embodied Landing gear - Improve protection of normal braking hydraulic system
SB 32-078	01		No effect Landing gear - Improve protection of normal braking hydraulic system
SB 32-078	02		No effect Landing gear - Improve protection of normal braking hydraulic system
SB 32-079		Aug 30/81	Embodied Landing gear - Install main landing gear tyre underinflation detection system
SB 32-079	01	Nov 30/81	Embodied Landing gear - Install main landing gear tyre underinflation detection system
SB 32-079	02		No effect Landing gear - Install main landing gear tyre underinflation detection system
SB 32-080		Nov 30/81	Embodied Landing gear - Normal braking - Provide dual hydraulic supply
SB 32-080	01	Nov 30/81	Embodied Landing gear - Normal braking - Provide dual hydraulic supply
SB 32-080	02		No effect Landing gear - Normal braking - Provide dual hydraulic supply
SB 32-081		Nov 30/83	Embodied
SB 32-082			Not applicable
SB 32-083			Not applicable
R SB 32-084		May 30/81	Embodied R Landing gear - Normal braking system - check R hydraulic pressure delivered by the servo-valves.

SERVICE BULLETIN LIST

	SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
	SB 32-085			No effect Landing gear - Improve protection of normal braking hydraulic system
	SB 32-086			No effect Landing gear - Improve ultimate emergency extension control lockpin extraction
	SB 32-087		Nov 30/84	Embodied Landing gear - Improvement of indication of deflated tyres
	SB 32-088		Nov 30/81	Embodied Landing gear. Ultimate emergency exten-sion - To make provision for separate overboard vents for nose gear doors and nose gear extension valves
	SB 32-090		Nov 30/81	Embodied Landing Gear - Normal braking - Modify brakes overload control unit to increase tolerance on normal braking maximum pres-sure
R R R	SB 32-091			No effect Brakes - Install "Pan Integral" Carbon Brakes as replacement for Rayon Brakes.
R R R	SB 32-092			No effect Landing Gear - Nose Gear Water Deflector. Install Bumper on non-frangible part.
R R R R	SB 32-093			No effect Inspection of upper Shortening (Connec-ting) rod P/N 762270 and 762271 manufac-tured by MHB.
R R R	SB 32-094			No effect Inspection of Stud P/N 750957 manufactu-red by MHB.
R R R R	SB 32-095		Nov 30/84	Embodied Landing Gear - Main Landing Gear - Operational check of Normal Brake Hydrau-lic System Safety valves.
R R R	SB 32-096			No effect. Normal Braking - Modify brakes overload Control Unit - Replace tantalum capacitors.

SERVICE BULLETIN LIST

	SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
R	SB 32-097			No effect Landing Gear. Main landing gear telescopic stay assembly
R	SB 32-097	01		No effect Landing Gear. Main landing gear telescopic stay assembly
R	SB 32-098			Embodied Landing Gear. Normal braking - To arrange control and anti-skid from same electrical supply
R	SB 32-098	01		Embodied Landing Gear. Normal braking - To arrange control and anti-skid from same electrical supply
R	SB 32-098	02	Sep 30/87	Embodied Landing Gear. Normal braking - To arrange control and anti-skid from same electrical supply
R	SB 32-099			Embodied Landing Gear. Normal braking - Protection of brakes overload control unit against HF interference
R	SB 32-A-100			No effect Landing Gear. Inspection of MLG downlock system
R	SB 32-101			No effect Landing Gear. To introduce alternative short tachometer generator and new design connectors resistant to all hydraulic fluid
R	SB 32-102			No effect Landing Gear. Main landing gear - Introduce new attachment for leg mounted door
R	SB 32-103			No effect Landing Gear. Improve resistance of front deflector
R	SB 32-104			No effect Landing Gear. Modify MLG shortening mechanism locking indication system
R	SB 32-104	01		No effect Landing Gear. Modify MLG shortening mechanism locking indication system
R	SB 32-104	02		No effect Landing Gear. Modify MLG shortening mechanism locking indication system

SERVICE BULLETIN LIST

	SB/AEB NO	REV	INC. IN REVISION	DESCRIPTION
R	SB 32-104	03		No effect Landing Gear. Modify MLG shortening mechanism locking indication system
R	SB 32-105			
R	SB 32-106			
R	SB 32-107		May 31/03	Embodied Landing Gear. Reinforce main landing gear well electrical bundles
R	SB 32-108			
R	SB 32-109		Mar 28/02	Embodied Landing Gear. Installation of Michelin NZG tyres and antiskid computer modified
R	SB 32-109	01		No effect Landing Gear. Installation of Michelin NZG tyres and antiskid computer modified
R	SB 32-110			No effect Landing Gear - MLG front water deflector - Modify profile and remove retention cable
R	SB 32-111		May 31/03	Embodied Landing Gear - Removal of main landing gear door flap closure fittings

CHAPTER 32

LANDING GEAR

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GENERAL - DESCRIPTION AND OPERATION

1. General (Ref. Fig. 001)

The landing gear is of the retractable tricycle type.
The main landing gears retract inboard towards the aircraft symmetry axis into the bays located partly in the fuselage and partly in the wing.
The nose gear retracts forward into the bay located in the fuselage.
A retractable tail gear retracts aft into a bay located in the fuselage.
With landing gear retracted, gear doors re-establish the fuselage-wing contour.

Each main gear includes a four-wheel bogie.
The nose gear is fitted with twin wheels.
The tail gear is fitted with two wheels and protects the fuselage and engine nacelle rear sections with aircraft in high nose-up attitude.
The landing gear and doors are actuated by electrically controlled hydraulic components.

The main gear wheels are equipped with hydraulic brake units supplied with Normal or Emergency pressure. Normal braking includes an anti-skid (SPAD) system.

Nosewheel steering comprises an electro-hydraulically operated system mechanically controlled from the flight compartment.

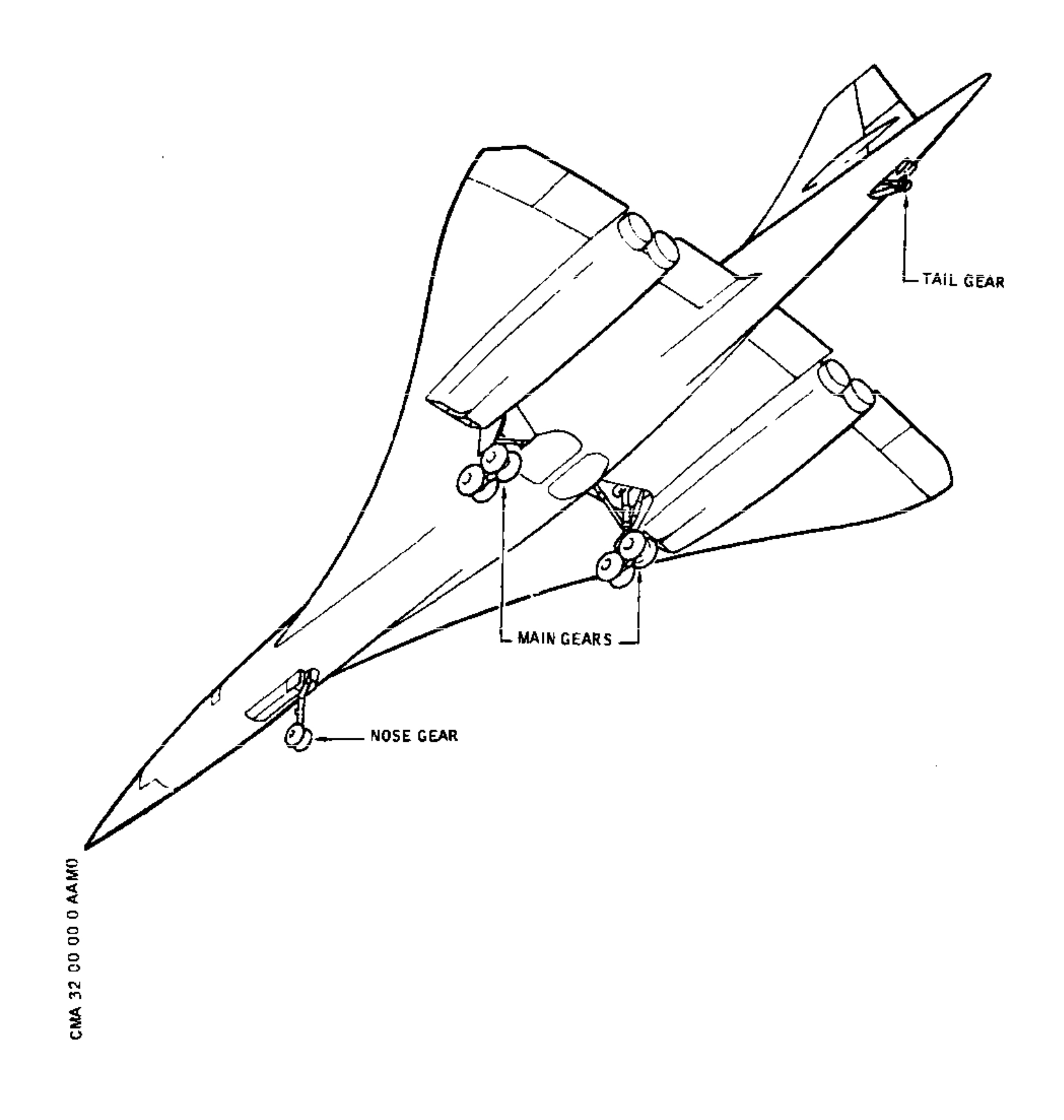
R After SB 32-079-01 For A/C 001-007,

A flat tyre detection system serves to alert the flight crew in the event of a flat or burst tyre.

2. Landing Gear

A. The nose and main gear shock absorbers, housed in the corresponding landing gear legs, are of the two stage with separator piston type. The shock absorber of each main landing gear is of the single chamber type without separator. The nose gear shock absorber is of the double-acting type with slowdown at the end of extension.
The nose gear, tail gear and main gears are retracted and extended by means of hydraulic actuating cylinders. The main gear telescopic brace struts (lateral) and the nose gear telescopic drag strut (longitudinal) serve for mechanical downlocking of gear.

The main gear drag struts serve for longitudinal bracing



Landing Gear
Figure 001

R

of each main gear. Lock release of main gear telescopic brace struts, nose gear telescopic drag strut and gear uplocks is hydraulic. As the total height of each main landing gear leg, with shock absorber extended, is superior to the space available in the gear bay, a shortening mechanism has proved necessary to retract the shock absorber into the leg bore during retraction. The automatic shortening mechanism is assisted by a hydraulic shortening jack. In the landing gear downlocked position, the main landing gear shock absorber is freed by the shortening mechanism and the landing gear leg is restored to its normal length.

The landing gear main doors are actuated by hydraulic jacks. Main door uplocking is mechanical and uplock release is hydraulic.

B. Two control handles, one located on the nose gear leg, the other on the LH main gear leg serve for the ground operation of the nose and main gear main doors respectively. Operation is only possible when the landing gear Normal control lever is in DOWN position and the visor is not uplocked.

C. The landing gear and main doors are actuated :

- In Normal operation (retraction and extension) by the Green hydraulic system.
  The electrical sequences are automatic.
  Microswitches mounted on the hydraulic components and controlled by the associated locking mechanism, prevent one retraction or extension phase beginning before the preceding phase is terminated.
- In Emergency operation (extension only) by the Yellow hydraulic system in a hydro-mechanical sequence.
- In Ultimate Emergency operation (extension only) under gravity (free-fall) after manual lock release.
  The tail landing gear is not extended.
  If necessary, compressed air can be supplied to downlock the main landing gear legs by charging of the corresponding telescopic brace struts.

D. Normal landing gear retraction and extension is controlled by a three-position (DOWN, NEUTRAL, UP) lever located on the First Officer's instrument panel.
The NEUTRAL position isolates the landing gear electro-hydraulic systems.
A safety device prevents the passage of the control lever to UP position when the aircraft is on its wheels, shock absorbers compressed.

E. Should a fault occur in the Green hydraulic system or the electrical control circuits, landing gear extension only

can be controlled in Emergency by a three-position (NEUTRAL, DOOR, WHEELS) lever located on the centre console.

- The lever is in the NEUTRAL position, with wirelock lead sealed cover, for all Normal landing gear operations.
- The lever in DOORS position controls the opening of the main doors, extension of tail landing gear and connection of Green pressure to tank return.
- Placed in WHEELS position it controls the extension of nose and main gears.

F. An indicating unit, located on First Officer's instrument panel, serves to check that landing gear and doors are operating correctly.

R **On A/C 001-006

G. An indicating unit (FAULT ANNUNCIATOR), located on Flight Engineer's panel, indicates, in the event of landing gear retraction failure, the retraction phase in which failure occurred.

H. In flight, with aircraft speed below 180 kts and at least two of the four engines idling an aural warning alerts the crew if the landing gear Normal control lever is in UP position or if the nose gear or one of the main gears is not downlocked with the landing gear Normal control lever in DOWN position.

I. In the event of Normal gear indicating system failure, a visual indicator, situated next to each of the Ultimate Emergency lock release controls, serves, by means of a light beam, to check that the nose gear telescopic drag strut and main gear telescopic brace struts are downlocked.

3. Brakes

A. The aircraft braking is controlled by the rudder pedals. A three-position (NORM, EMERG, PARK) lever, situated on the centre console, serves to select one of the three braking modes.
- With the brake selector lever in NORM position, proportional and differential braking is provided for each of the main landing gear wheels. Pressure is supplied by the Green or, in the event of failure, Yellow hydraulic system. In both cases, an advanced electrical anti-skid system, based on a comparison between the rotational speed of the nose gear wheels, which are not braked, and the rotational speed of each main gear wheel, enables optimum braking to be obtained without uncontrolled skidding.
- With brake selector lever in EMERG position, proportional and differential braking is provided for each of the main gear wheels by means of an independent hydraulic system

transmitting pedal moment to the distribution block. Pressure is supplied by the Yellow hydraulic system or the Emergency accumulator.
- With the brake selector lever in PARK position, maximum braking is applied equally to each of the main gear wheels. Pressure is supplied by the Yellow hydraulic system or Emergency accumulator.

B. An electric fan, installed in each main gear wheel, serves to cool the brake units.

Nose gear and main gear wheels are automatically braked during landing gear retraction.

C. A test and indicating system informs the flight crew of :

- A drop in hydraulic pressure in the Normal braking system with the pedals depressed.
- Brake overheating or an anomaly at the wheels.
- Operation of brake anti-skid (SPAD) control system.
- Emergency braking accumulator pressure.
- The pressure delivered to the wheels during Emergency or Parking braking.
- The positioning of brake selector lever in EMERG or PARK position.
- Brake overload condition.

4. Nosewheel Steering

Nosewheel steering comprises an electro-hydraulically operated system mechanically controlled from the flight compartment. Mechanical control is accomplished either by means of the rudder pedals or the steering control handles.

The rudder pedals used during take-off and landing provide maximum wheel travel of ± 10°.

The steering control handles used during taxying provide maximum wheel travel of ± 60°. Orders transmitted by the control handles override orders from the rudder pedals.

The nosewheel steering system is supplied with Green hydraulic pressure automatically replaced by Yellow hydraulic pressure in the event of Green system failure.

Monitoring provisions render the controls inoperative in the event of failure or if operating criteria are not fulfilled.

Shimmy damping is then provided through a self-contained back up unit powered by the Green hydraulic pressure of the nose gear door closing system.

STEERING and NOSEWHEEL warning lights illuminate during anti-shimmy operation of steering system.

5. Controls and Indicating

The landing gear, brake and steering controls and indicators are grouped on the following panels.
First Officer's instrument panel (Ref. Fig. 002)

Landing gear Normal control. Gear, brakes and steering indicating. Brake temperature warning.

After SB 32-079-01 For A/C 001-007,

First Officer's instrument panel (Ref. Fig. 003)

Landing gear Normal control. Gear, brakes and steering indicating. Brake temperature warning.
Flat tyre warning.

Captain's instrument panel (Ref. Fig. 004)

Flat tyre warning
Centre instrument panel (Ref. Fig. 005)

Emergency braking indicating. Normal and Emergency braking warning.

Glareshield (Ref. Fig. 006)

Steering warning

Centre console (Ref. Fig. 007)

Brake control. Emergency landing gear control. Landing gear aural warning.

Flight Engineer's panel (Ref. Fig. 008)

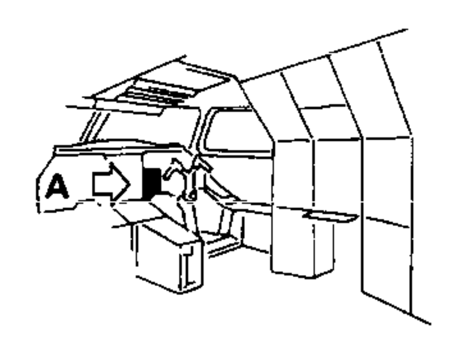
After SB 32-079-01 For A/C 001-007,

Flight Engineer's panel (Ref. Fig. 009)

Brake overload indicating. Brake fan control. Emergency braking pressure indicating. Brake temperature indicating and warning.

Passenger compartment floor (Ref. Fig. 010 and 011)

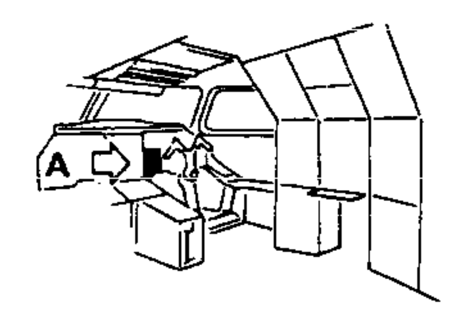
Nose and main landing gear Ultimate Emergency Control.
Visual indicating.
R **On A/C 001-006
Flight Engineer's panel (Ref. Fig. 012)
R **On A/C 007-007
Flight Engineer's panel (Ref. Fig. 012A)



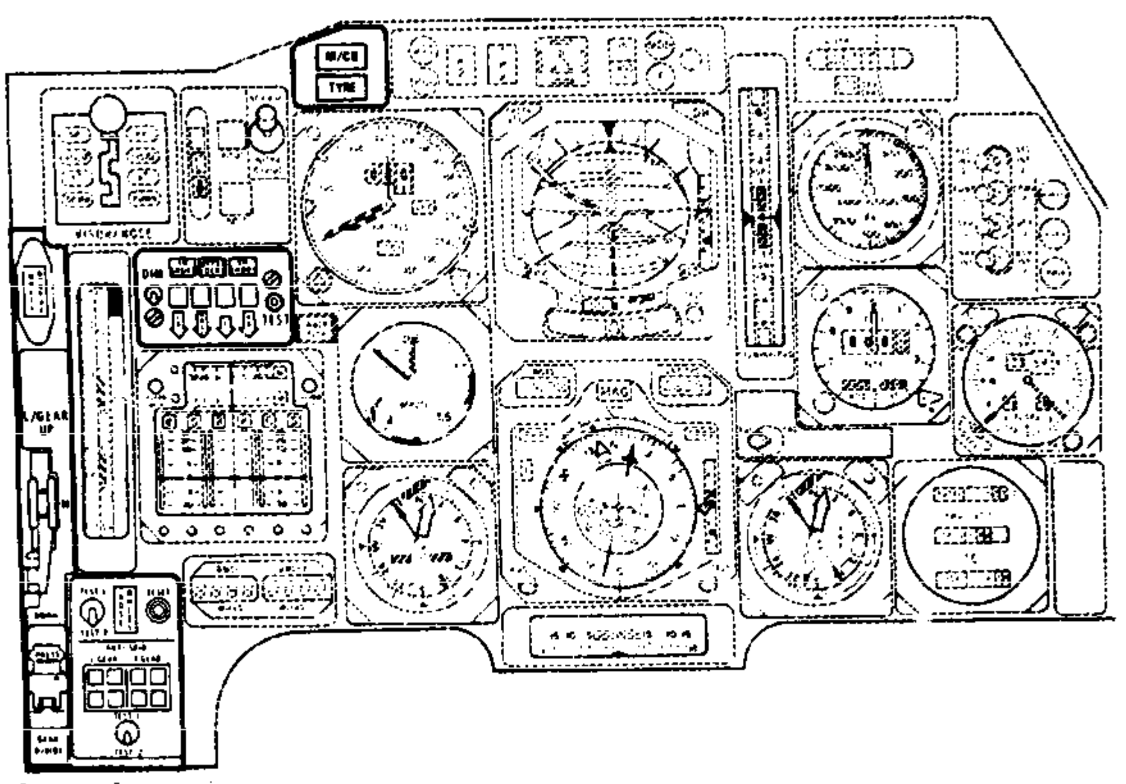


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First Officer's Instrument Panel
Figure 002

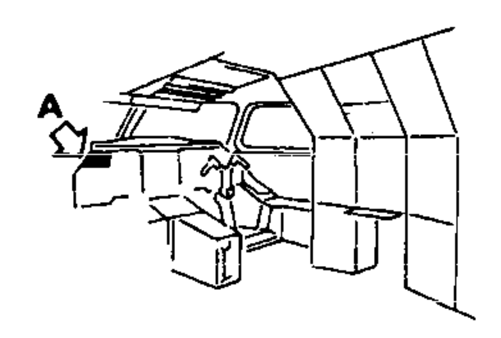


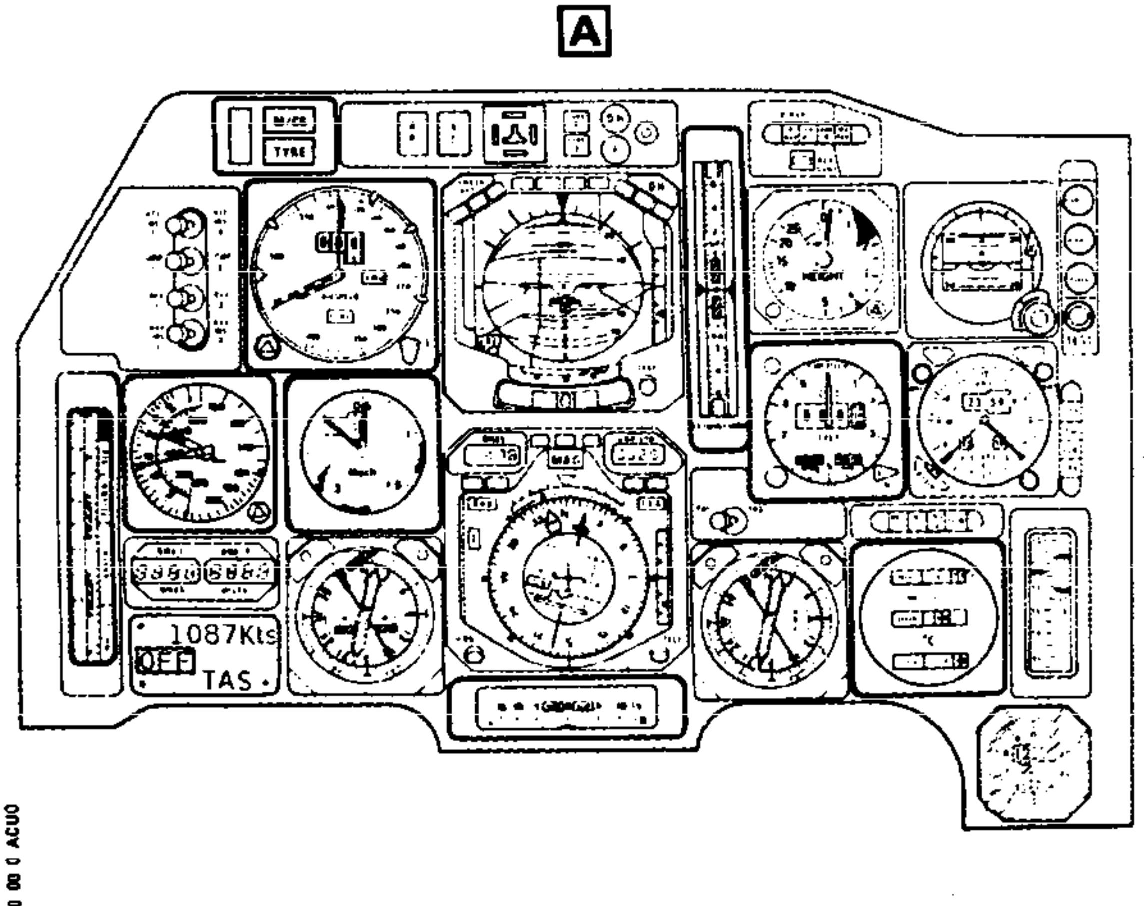
A



CMA 32 00 00 0 ACRO

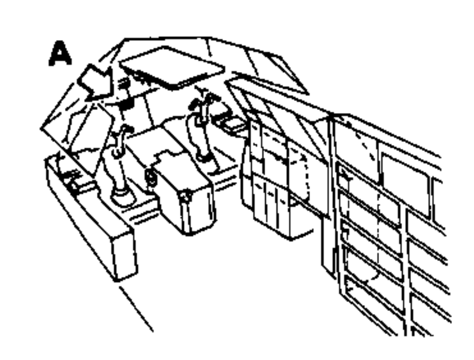
R First Officer's Instrument Panel
Figure 003



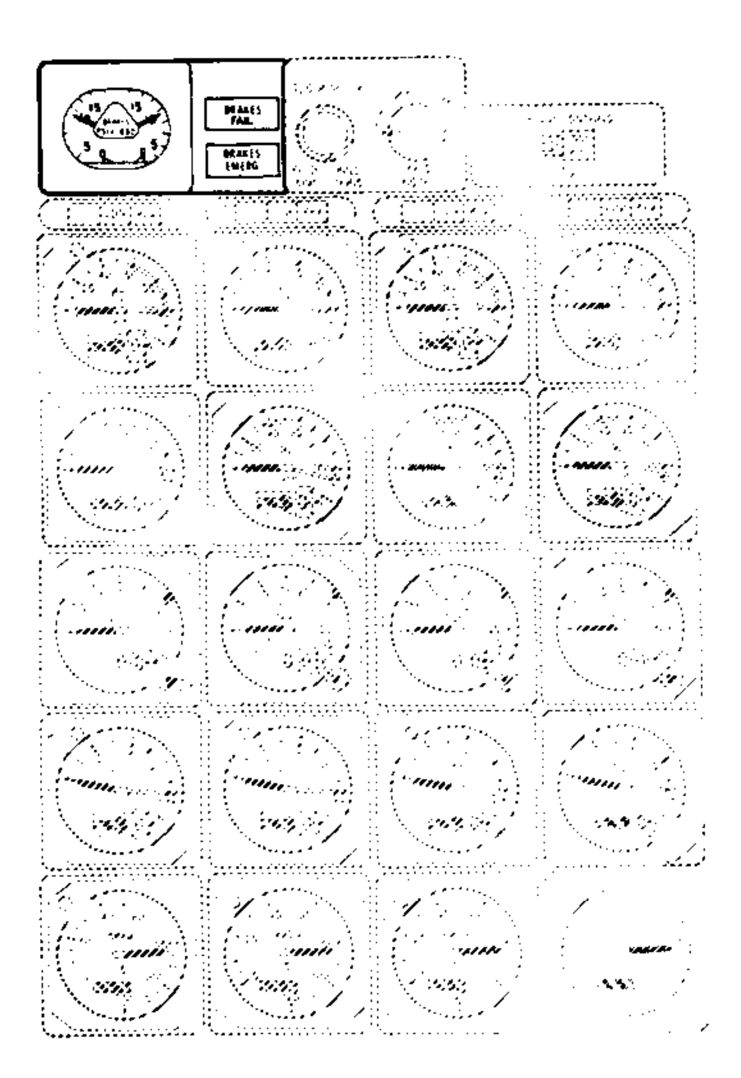


CMA 32 00 00 0 ACU0

R Captain's Instrument Panel
Figure 004

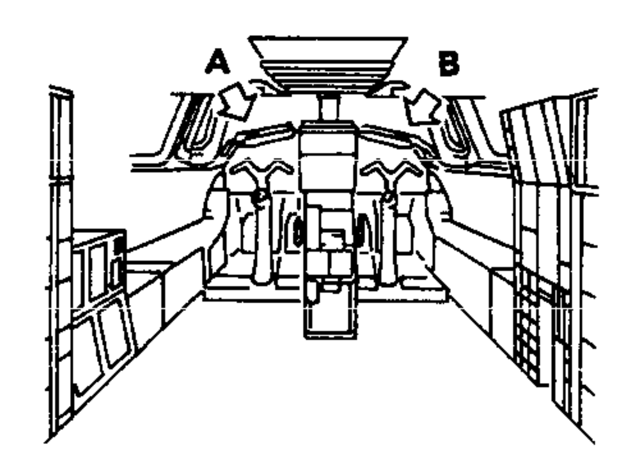


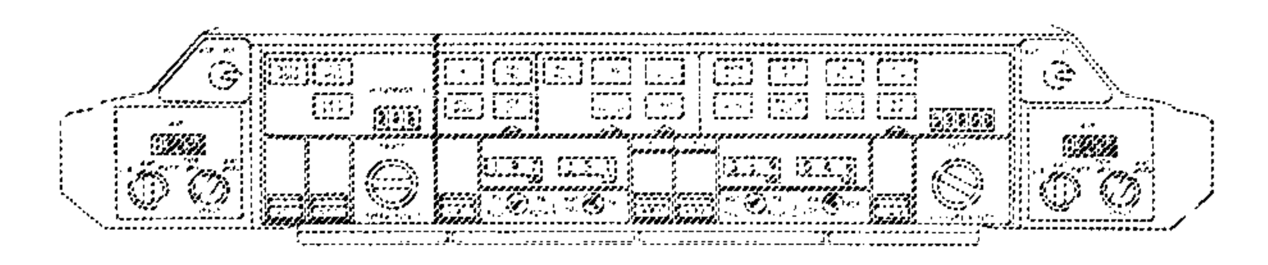


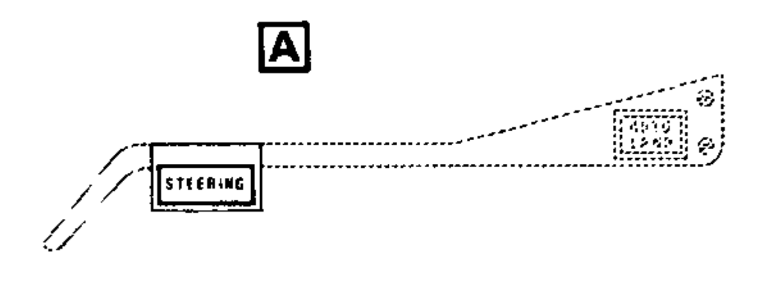


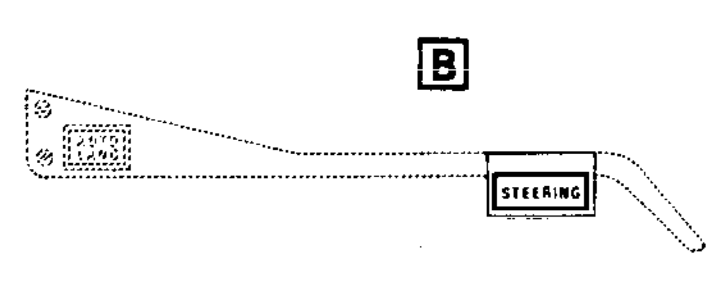
CMA 32 00 00 0 AEMO

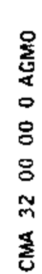
Centre Instrument Panel
Figure 005



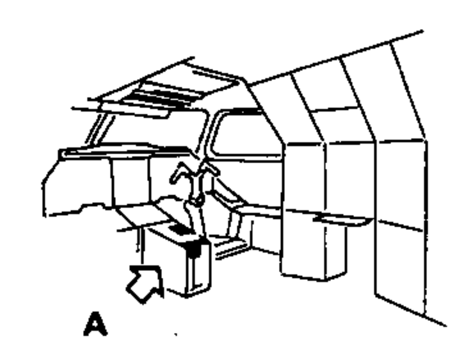




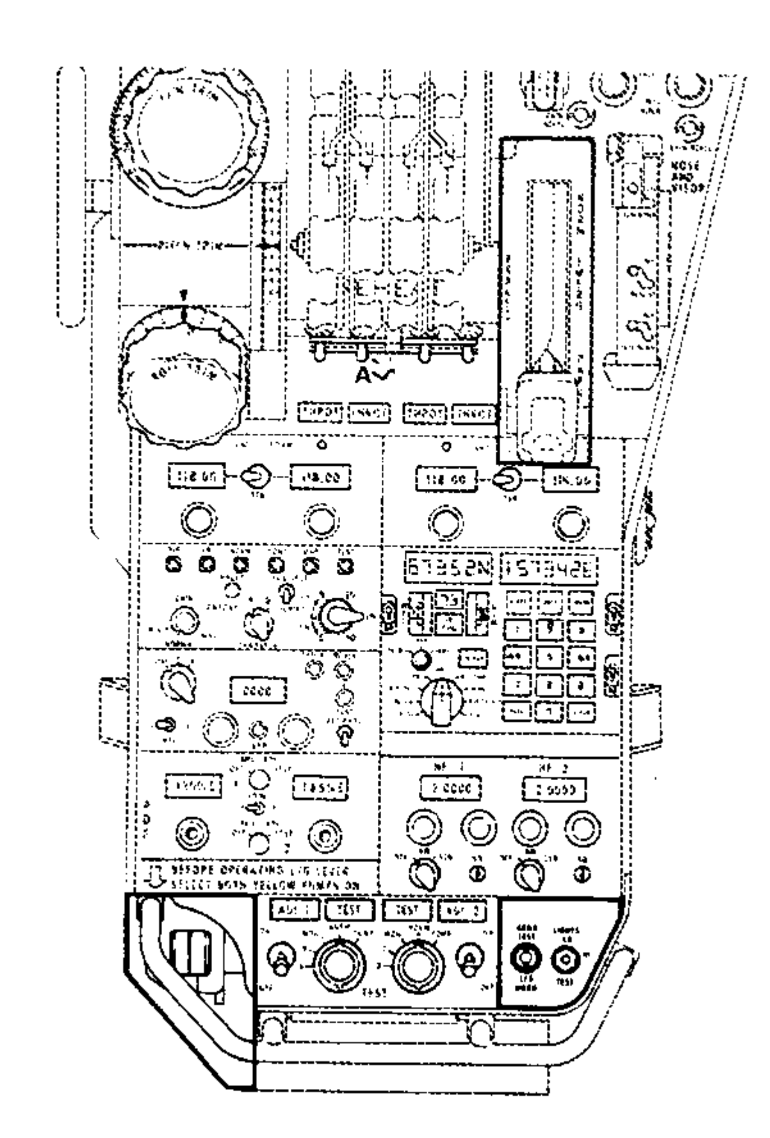




Glareshield
Figure 006

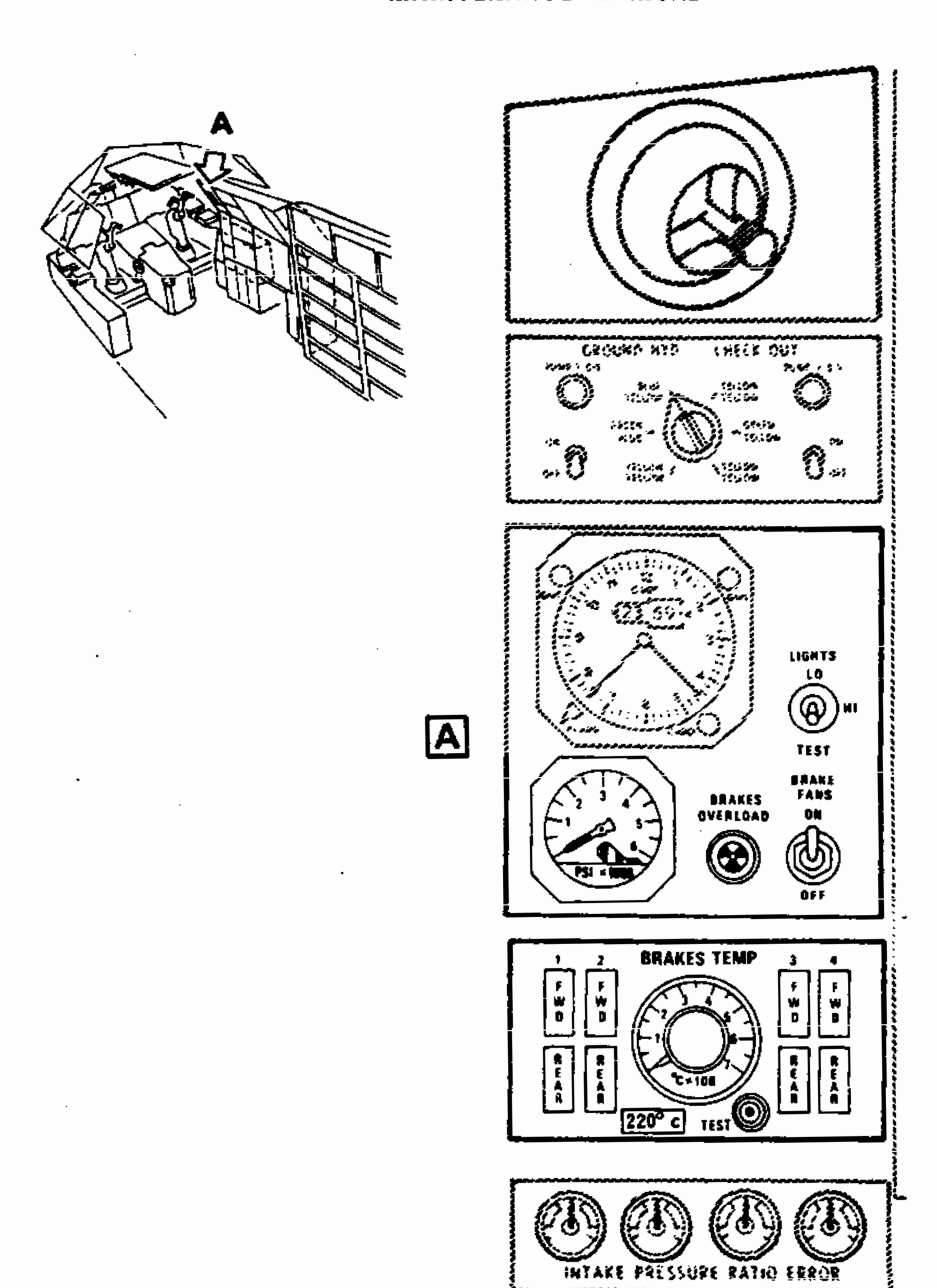


A



CMA 32 00 00 0 AJMO

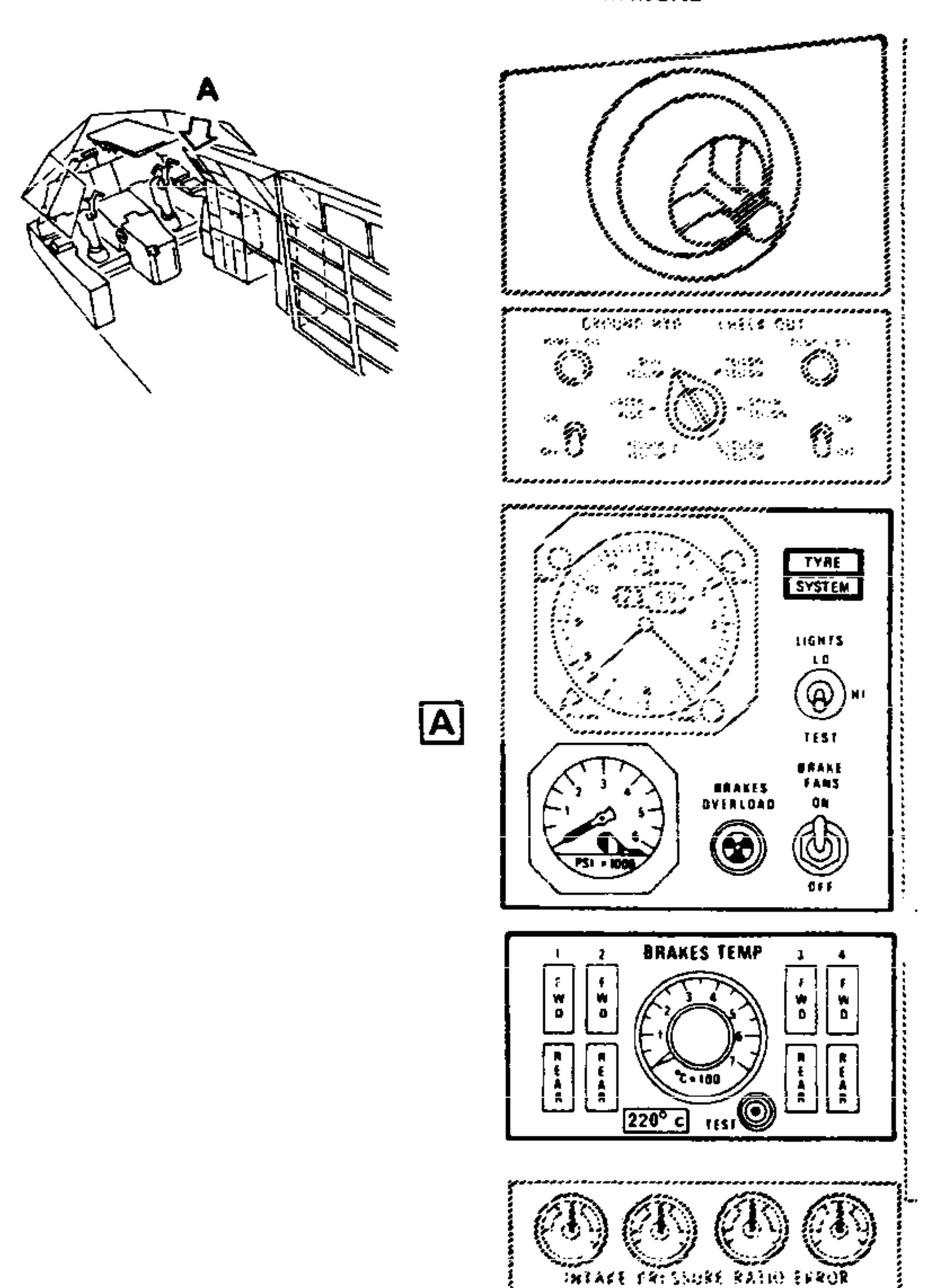
Centre Console
Figure 007



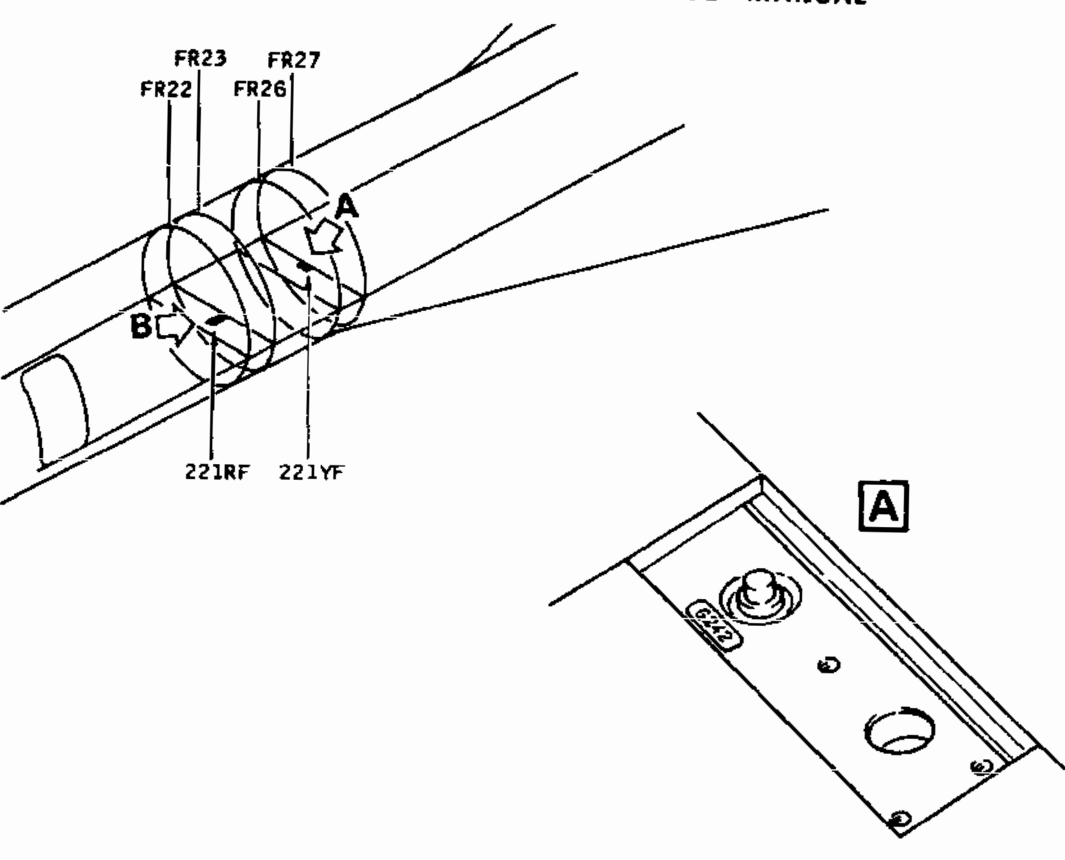
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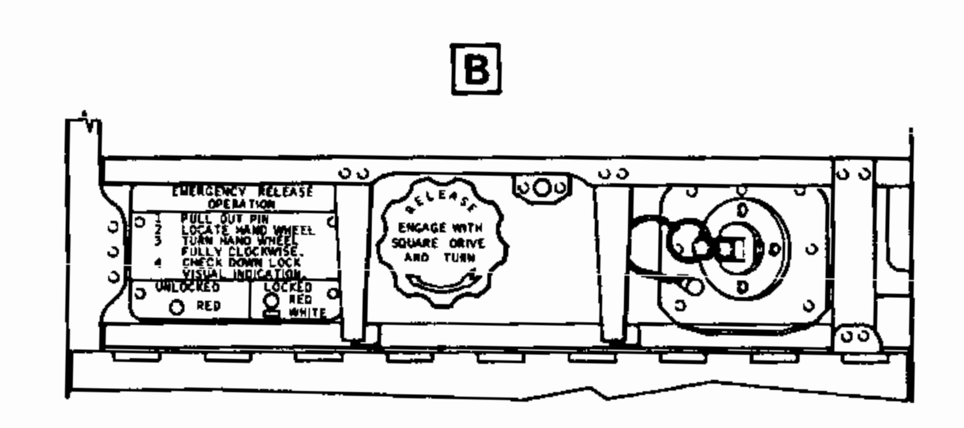
Flight Engineer's Panel
Figure 008

R



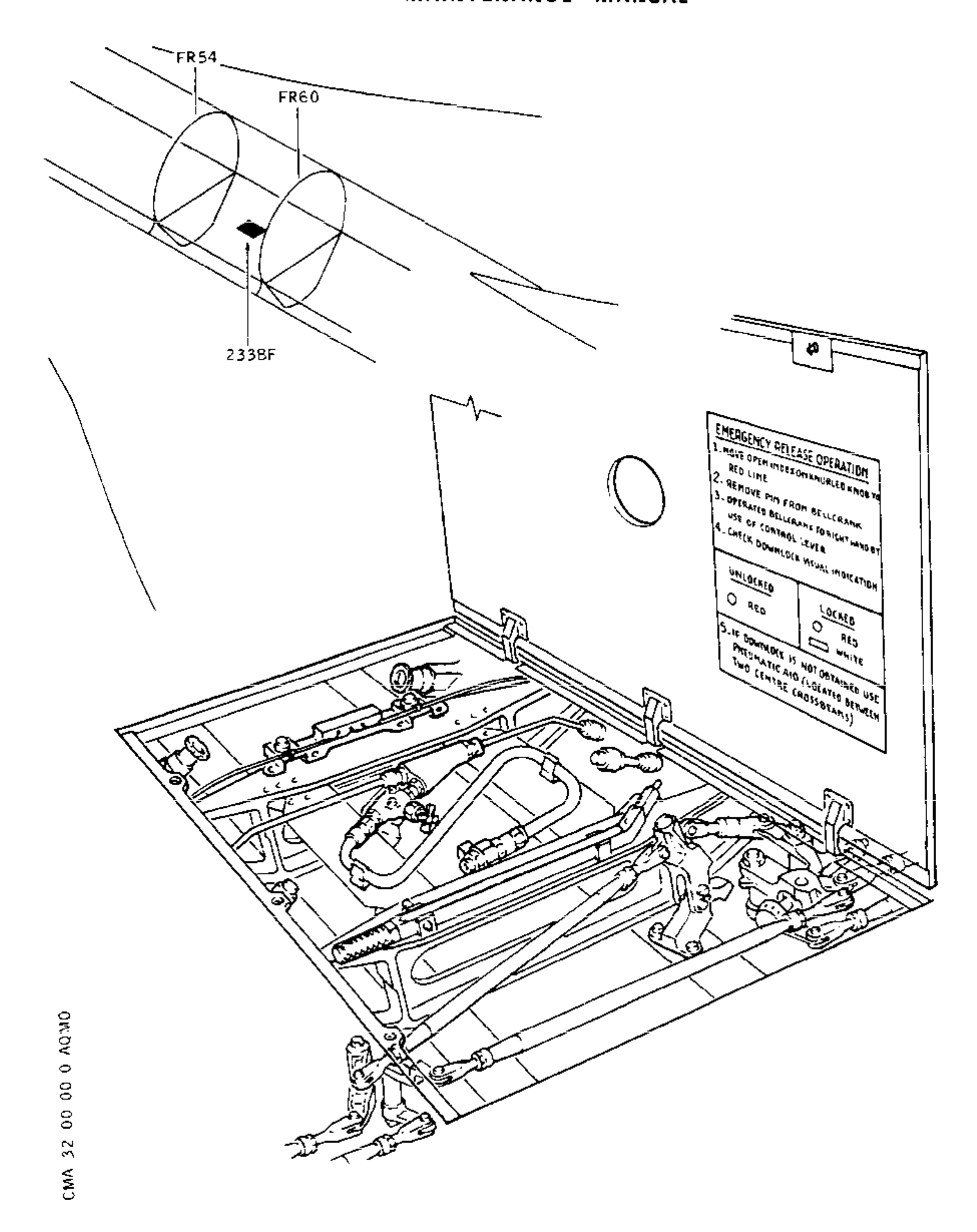
R Flight Engineer's Panel
Figure 009



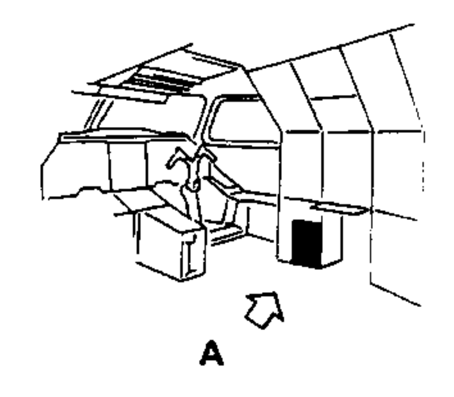


CMA 32 00 00 0 ANMO

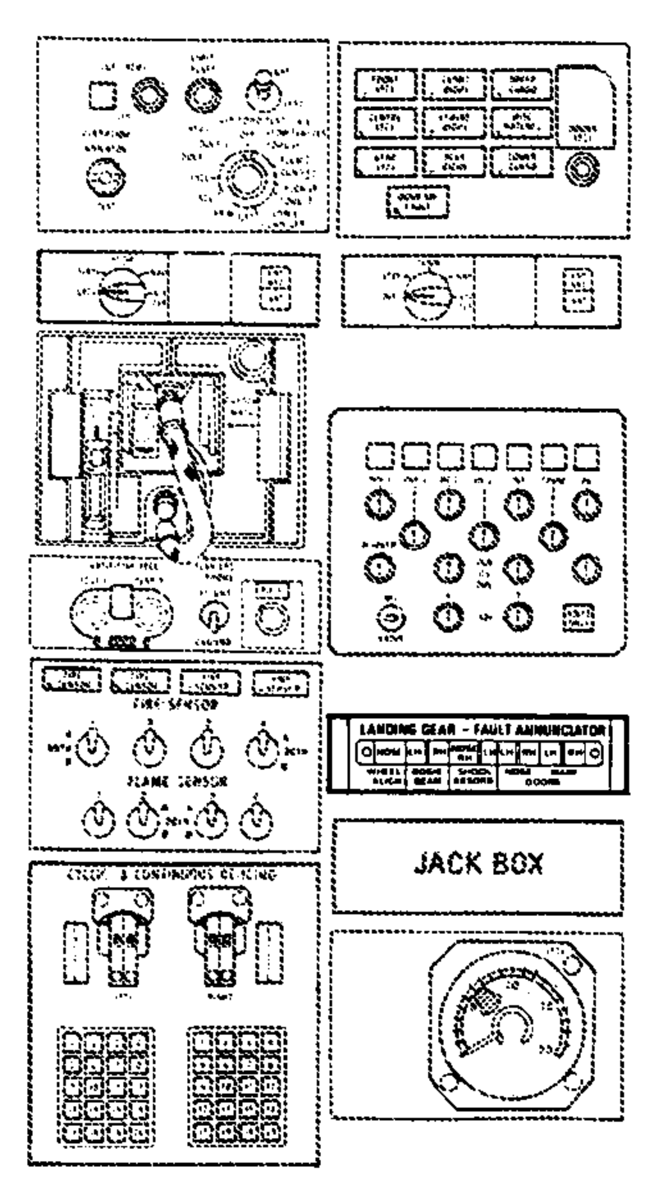
Passenger Compartment Floor - Sheet 1
Figure 010



Passenger Compartment Floor - Sheet 2
Figure 011

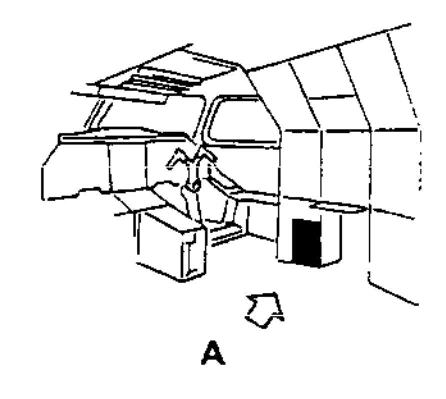


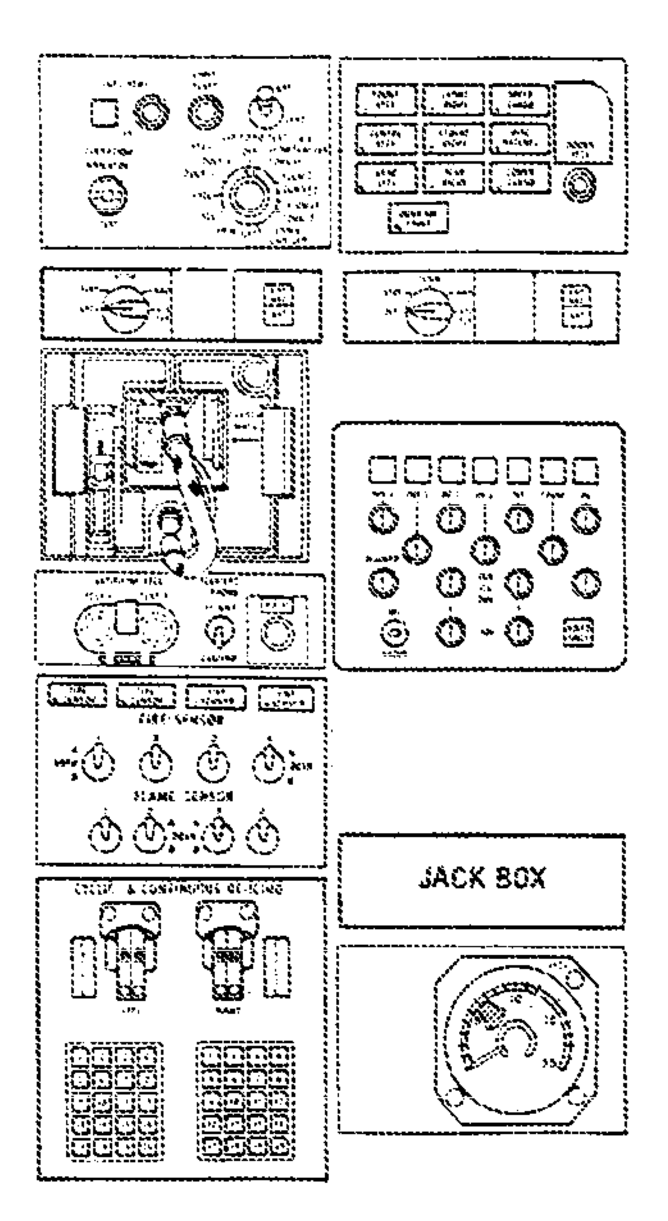
A



CMA 32 00 00 0 ASMO

Flight Engineer's Panel
Figure 012





CMA 32 00 00 0 ASMO 01

Flight Engineer's Panel
Figure 012A

INTENTIONALLY BLANK

Landing gear retraction failure indicating.

6. System Management

Landing gear, braking and steering system management procedures enabling the systems to be controlled and monitored, either to test the systems and their components, or to perform servicing operations, are carried out by means of switches and indicators which are located in the flight compartment or in the passenger compartment.

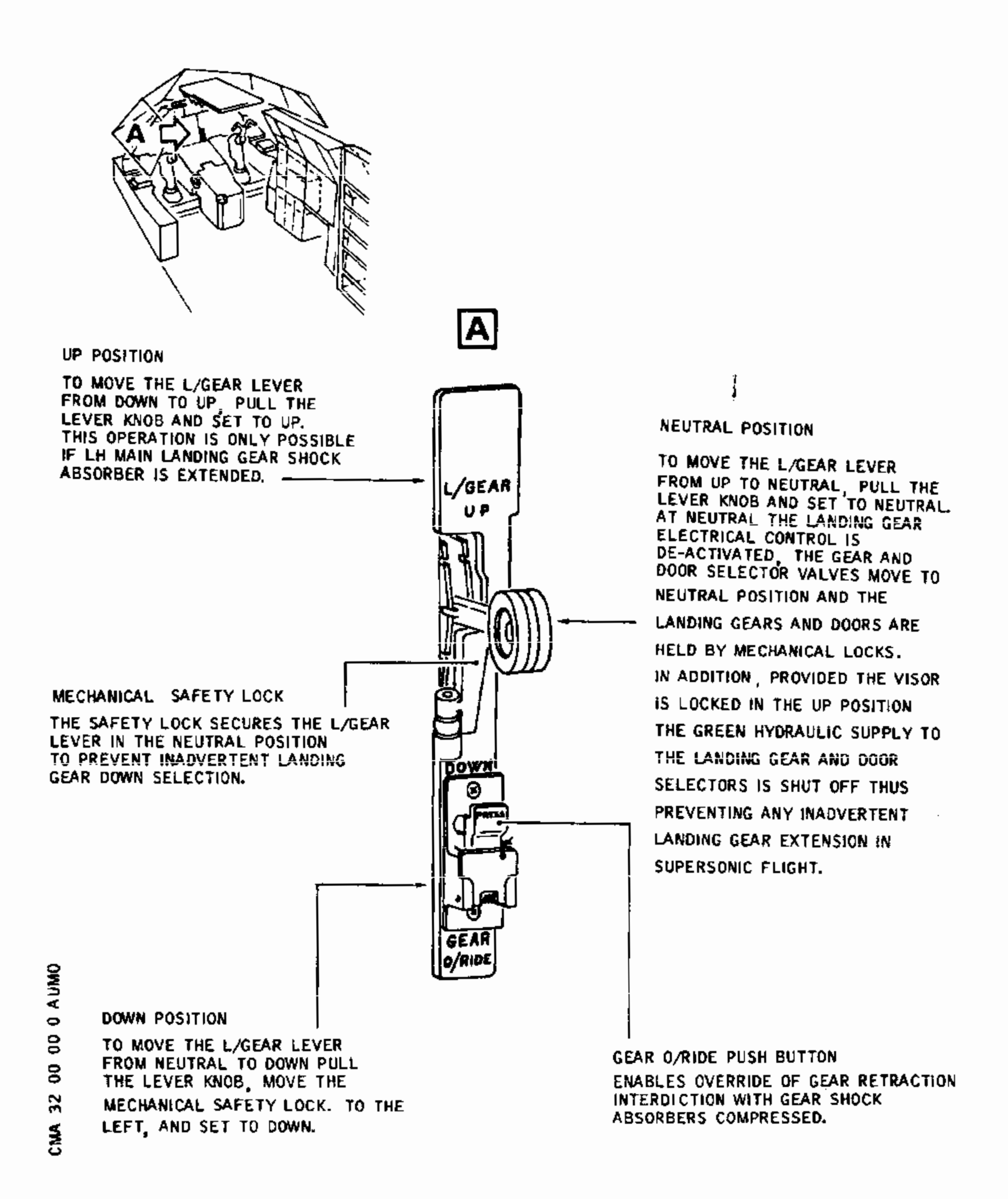
(Ref. Fig. 013 and 014)
R **On A/C 001-006
(Ref. Fig. 015)

After SB 32-079-01 For A/C 001-007,

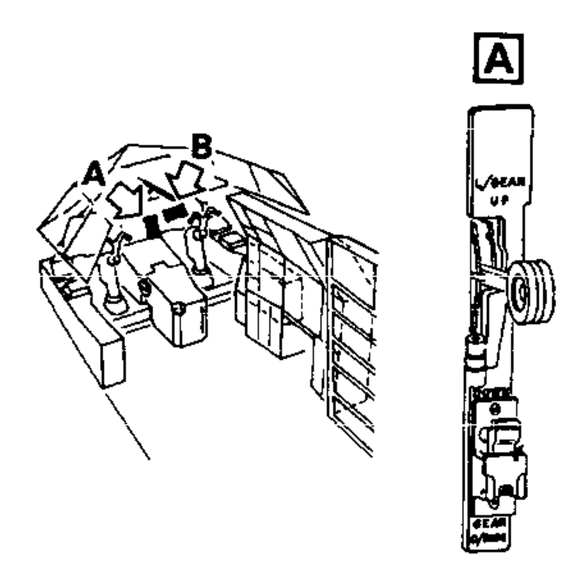
(Ref. Fig. 016)
(Ref. Fig. 017, 018 and 019)
(Ref. Fig. 020)
(Ref. Fig. 021)
(Ref. Fig. 022)

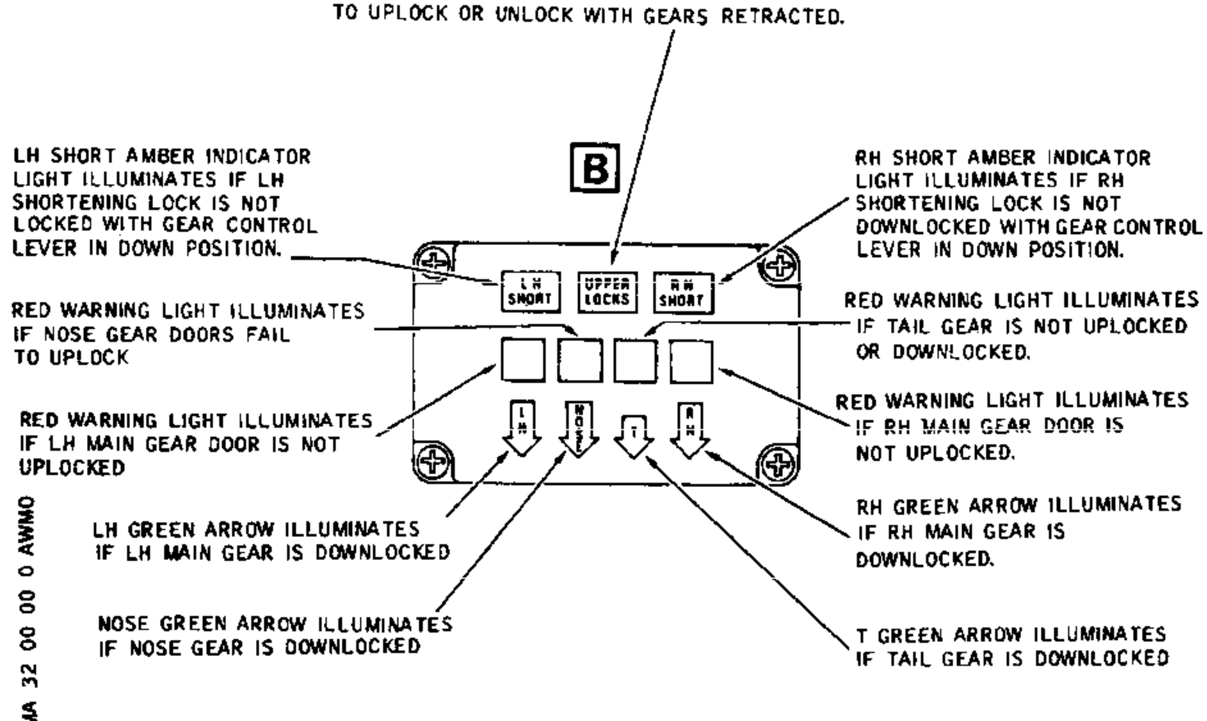
After SB 32-079-01 For A/C 001-007.

(Ref. Fig. 023)
(Ref. Fig. 024 and 025)

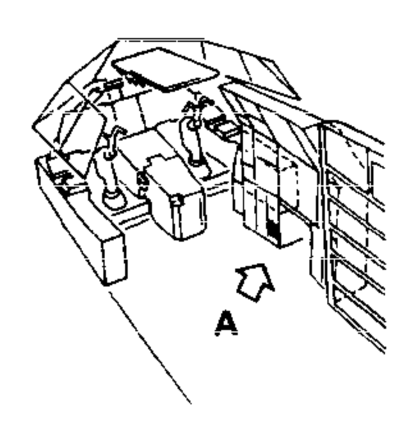


Landing Gear Normal Control
Figure 013





Landing Gear Normal Extension/
Retraction Indicating
Figure 014



GEAR CONTROL LEVER IN UP POSITION LH YELLOW INDICATOR LIGHT ILLUMINATES IF LH GEAR BOGIE BEAM IS NOT PERPENDICULAR WITH LEG.

GEAR CONTROL LEVER IN UP POSITION. RH YELLOW INDICATOR LIGHT ILLUMINATES IF RH GEAR BOGIE BEAM IS NOT PERPENDICULAR WITH LEG.

GEAR CONTROL LEVER IN UP POSITION. RH-NOSE YELLOW LIGHT ILLUMINATES IF NOSE AND MAIN GEAR RH SHOCK ABSORBERS ARE COMPRESSED.

GEAR CONTROL LEVER IN UP OR NEUTRAL POSITION. LH YELLOW INDICATOR LIGHT ILLUMINATES IF LH GEAR SHOCK ABSORBER IS COMPRESSED.

A

GEAR CONTROL LEVER IN UP POSITION. NOSE YELLOW INDICATOR LIGHT ILLUMINATES IF NOSE WHEELS ARE NOT CENTRED.

LANDING GEAR FAULT ANNUNCIATOR

NOSE | LH | RH | RH NOSE | LH | LH | RH | LH | RH

WHEEL ALIGN. | BOGIE BEAM | SHOCK ABSORB. | NOSE DOORS | MAIN

GEAR CONTROL LEVER IN UP POSITION. GEARS NOT UPLOCKED. LH YELLOW INDICATOR LIGHT ILLUMINATES IF LH NOSE GEAR DOOR IS NOT OPEN.

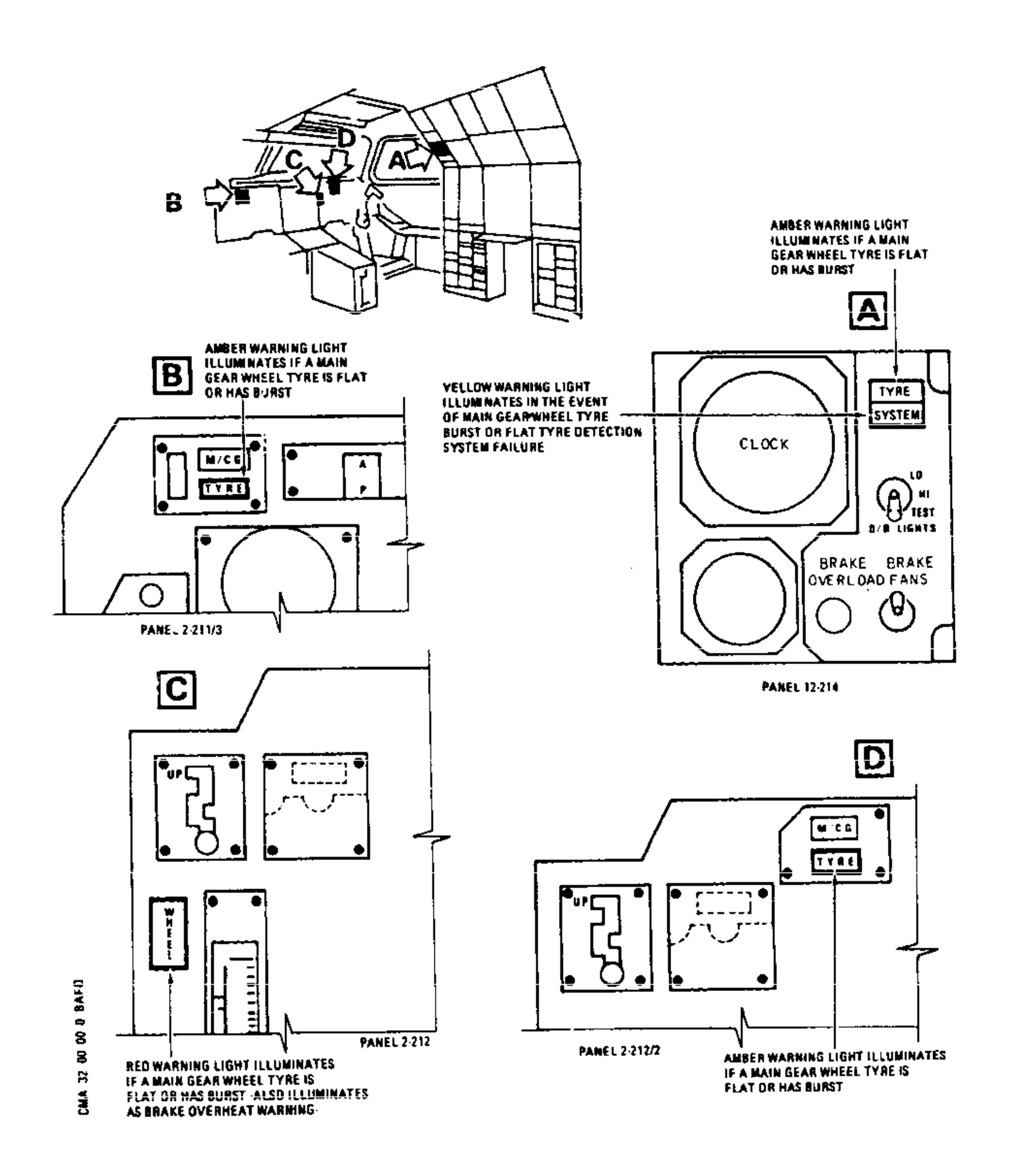
GEAR CONTROL LEVER IN UP POSITION. GEARS NOT UPLOCKED. RH YELLOW INDICATOR LIGHT ILLUMINATES IF RH NOSE GEAR DOOR IS NOT OPEN.

GEAR CONTROL LEVER IN UP POSITION. GEARS NOT UPLOCKED. LH YELLOW INDICATOR LIGHT ILLUMINATES IF LH MAIN GEAR DOOR IS NOT OPEN.

GEAR CONTROL LEVER IN UP POSITION. GEAR NOT UPLOCKED RH YELLOW INDICATOR LIGHT ILLUMINATES IF RH MAIN GEAR DOOR IS NOT OPEN.

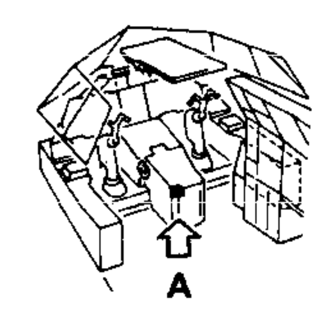
CMA 32 00 00 0 AYMO

FAULT ANNUNCIATOR (Landing Gear Retraction)
Figure 015



R

Flat Tyre Warnings
Figure 016



A

NEUTRAL
DOORS
WHEELS

NEUTRAL : YELLOW HYDRAULIC SYSTEM PRESSURE IS AVAILABLE AT LANDING GEAR AND DOOR EMERGENCY SELECTOR VALVE.
TO SET THE LEVER TO DOORS, THE HANDLE CATCH MUST BE PRESSED.

DOORS : YELLOW HYDRAULIC SYSTEM PRESSURE IS DELIVERED TO :
- THE NOSE GEAR AND MAIN GEAR RETURN AND DEPRESSURIZATION VALVES TO CUT-OFF PRESSURE TO THE GEAR AND DOOR ELECTRO-HYDRAULIC SELECTORS.
- THE NOSE AND MAIN GEAR DOOR UPLOCKS, TO THE CORRESPONDING DOOR ACTUATING JACKS AND TO THE TAIL GEAR ACTUATING CYLINDER.
THE NOSE AND MAIN GEAR DOORS OPEN, THE TAIL GEAR EXTENDS.
WAIT 2 SECONDS APPROX.
TO SET THE LEVER TO WHEELS, BOTH THE HANDLE CATCH AND THE SEPARATE RELEASE CATCH MUST BE PRESSED.

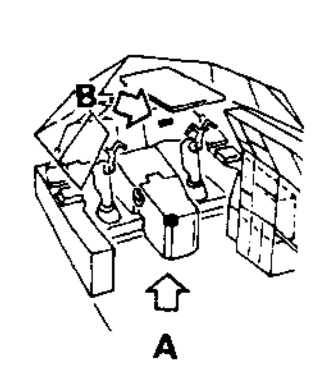
WHEELS : YELLOW HYDRAULIC SYSTEM PRESSURE RELEASES THE NOSE AND MAIN GEAR UPLOCKS AND LOWERS THE NOSE AND MAIN GEARS.

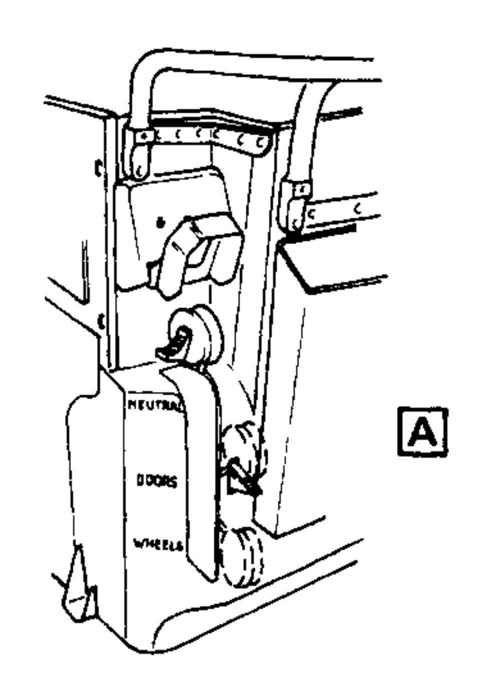
RELEASE CATCH

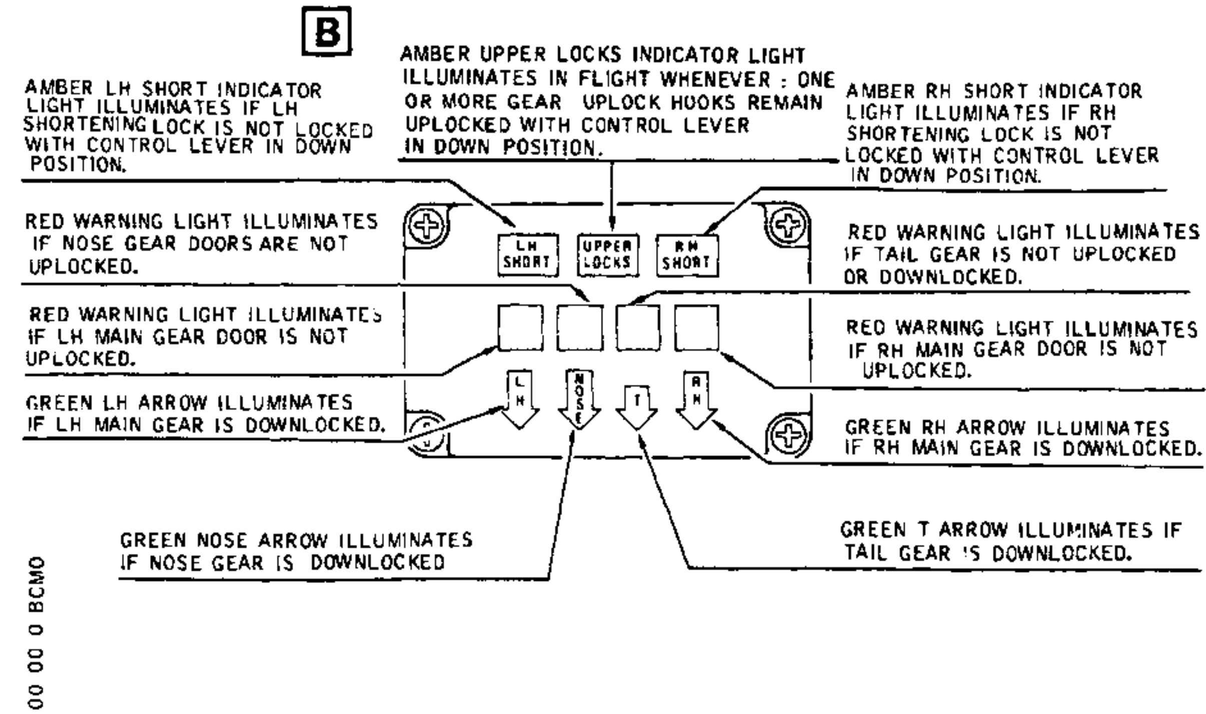
HANDLE CATCH

CMA 32 00 00 0 BAMO

Landing Gear Emergency Control
Figure 017

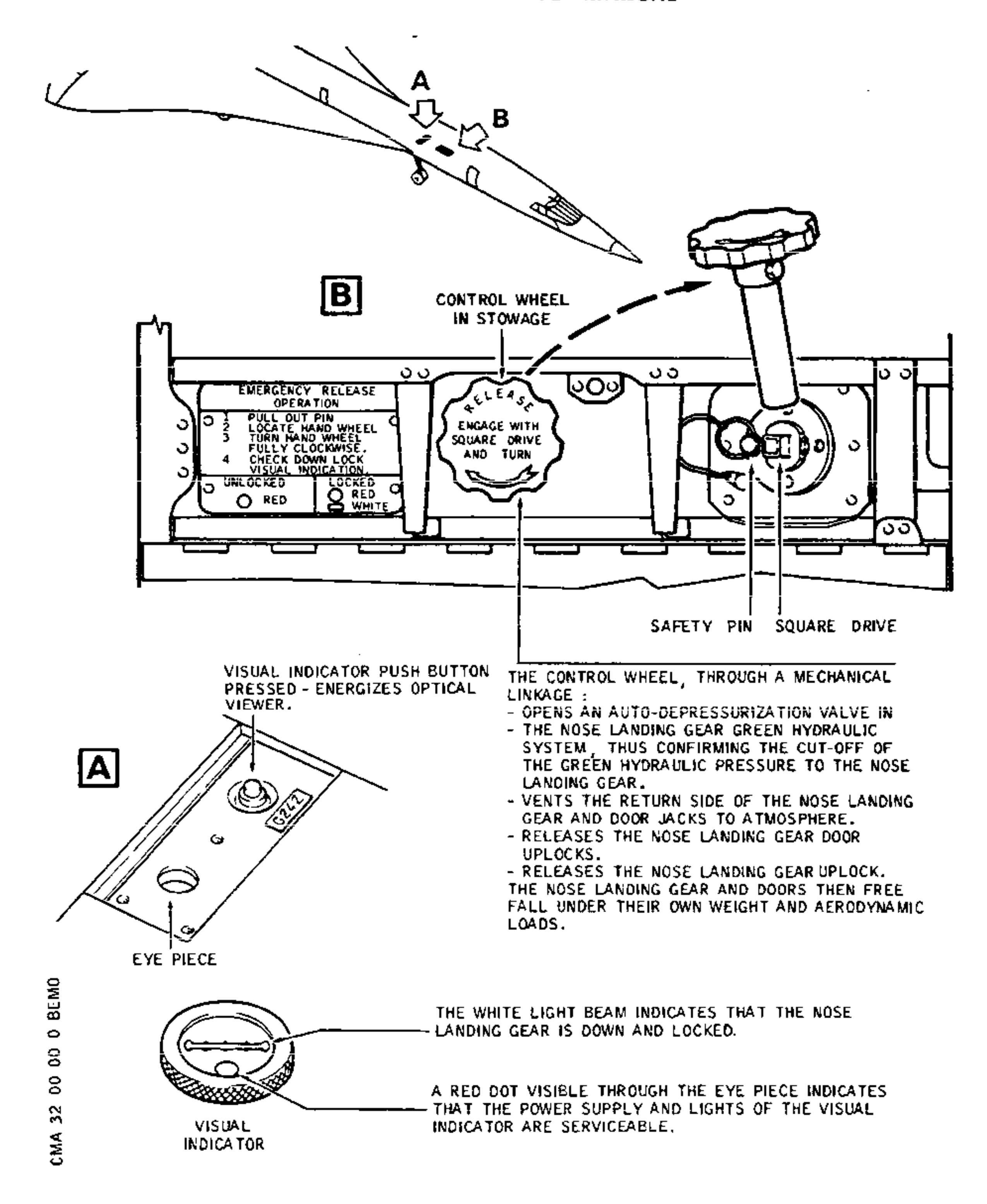




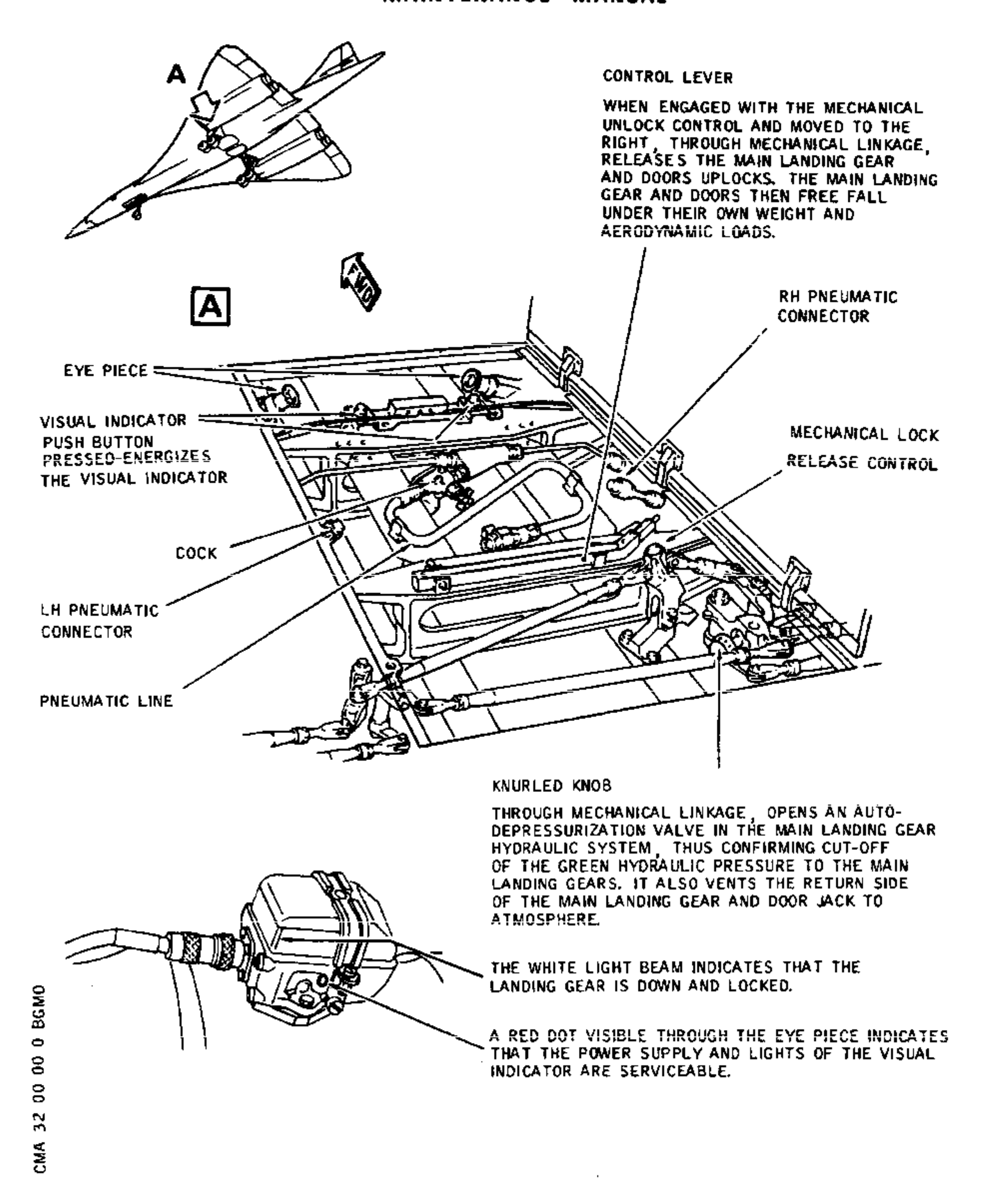


CMA 32 00 00 0 BCMO

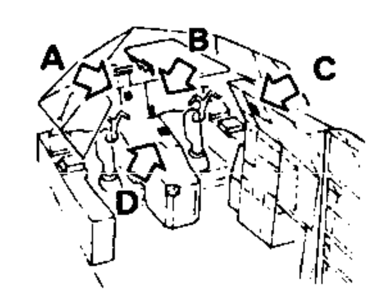
Landing Gear Emergency Extension Indicating
Figure 018



Nose Landing Gear Ultimate Emergency
Extension Control and Indicating
Figure 019



Main Landing Gear Ultimate Emergency
Extension Control and Indicating
Figure 020



A

BRAKES FAIL

BRAKE SELECTOR LEVER IN NORM POSITION AND PEDALS DEPRESSED, RED BRAKES FAIL WARNING LIGHT ILLUMINATES TO INDICATE DROP IN HYDRAULIC PRESSURE.

B

ANTI_SKID
L.GEAR R.GEAR
R R R R
R R R R
TEST 1
TEST 2

WHITE R ILLUMINATES ON BLACK BACKGROUND WHEN CORRESPONDING SERVO-VALVE RECEIVES A BRAKE DE-ACTIVATION ORDER

SWITCH IN TEST 1 AND TEST 2 POSITION
SWITCH SET TO TEST 1 AND TEST 2 POSITIONS SERVES TO CONFIRM, BY THE SIMULTANEOUS ILLUMINATION OF THE EIGHT R LIGHTS THAT THE TWO NOSE GEAR TACHOMETER GENERATORS ARE SERVICEABLE.

D

BRAKES
NORM
EMERG
PARK

NORM : FULL ANTI-SKID BRAKING POWERED BY GREEN HYDRAULIC SYSTEM IS SELECTED IN THE EVENT OF GREEN PRESSURE FAILURE YELLOW HYDRAULIC SYSTEM PRESSURE TAKES OVER IF ROTARY SELECTOR ON SERVO CONTROL PANEL IS SET TO YELLOW/GREEN.

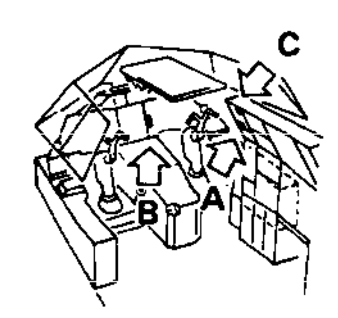
C

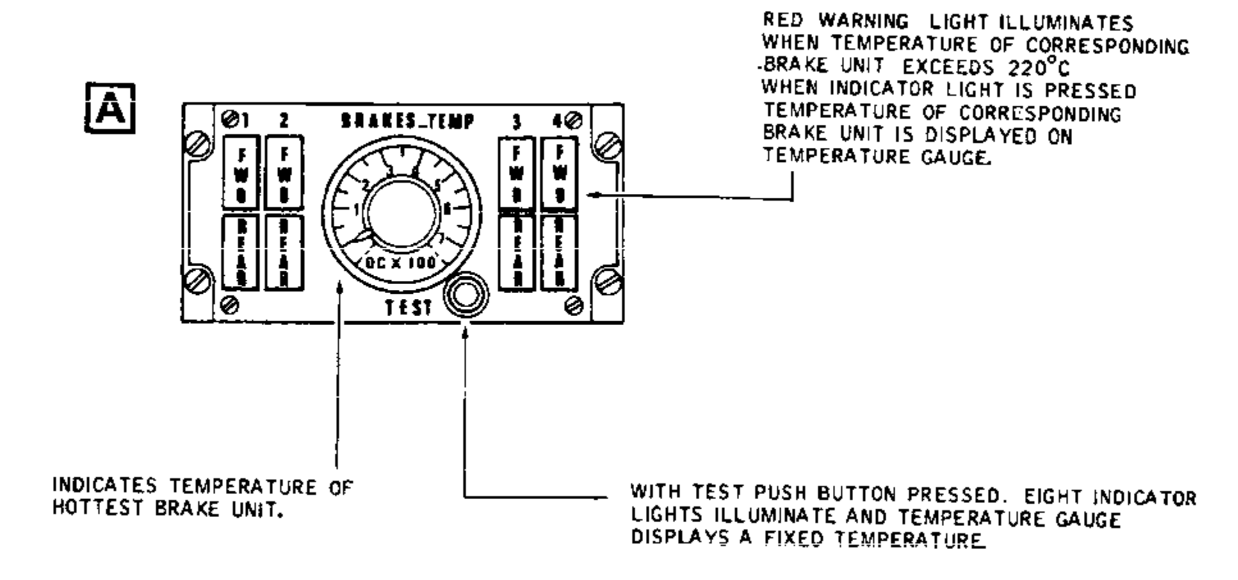
LIGHTS
LO
HI
TEST
BRAKE FANS
ON
OFF
BRAKES OVERLOAD

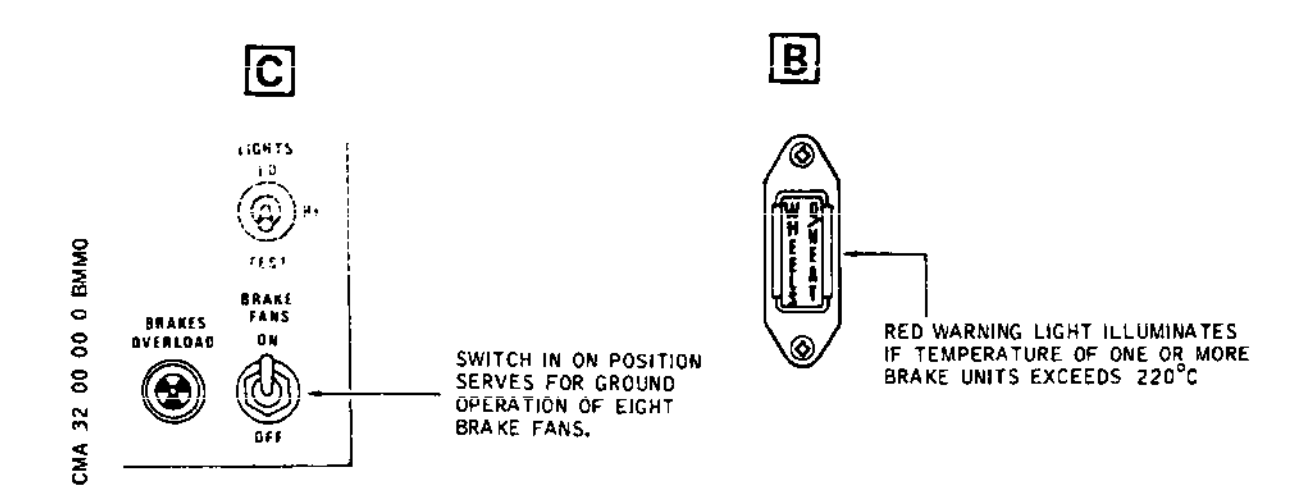
MAGNETIC INDICATOR SHOWS WHITE : EXCESSIVE TORQUE AT ONE OR MORE BRAKE TORQUE ARMS.

CMA 32 00 00 0 BJMO

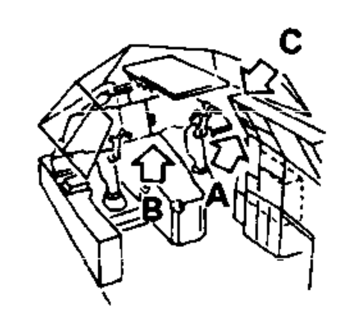
Normal Braking Control and Indicating
Figure 021

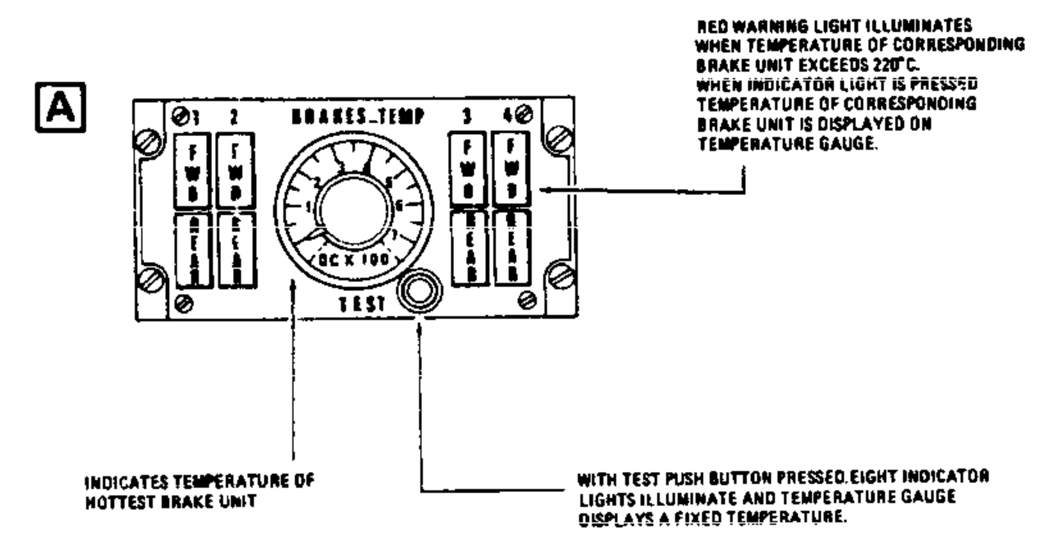


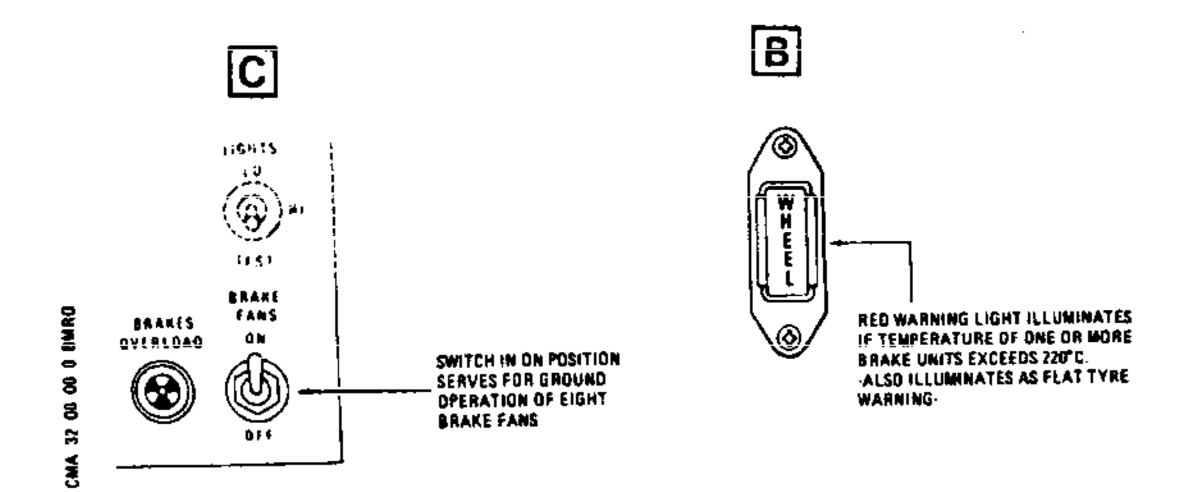




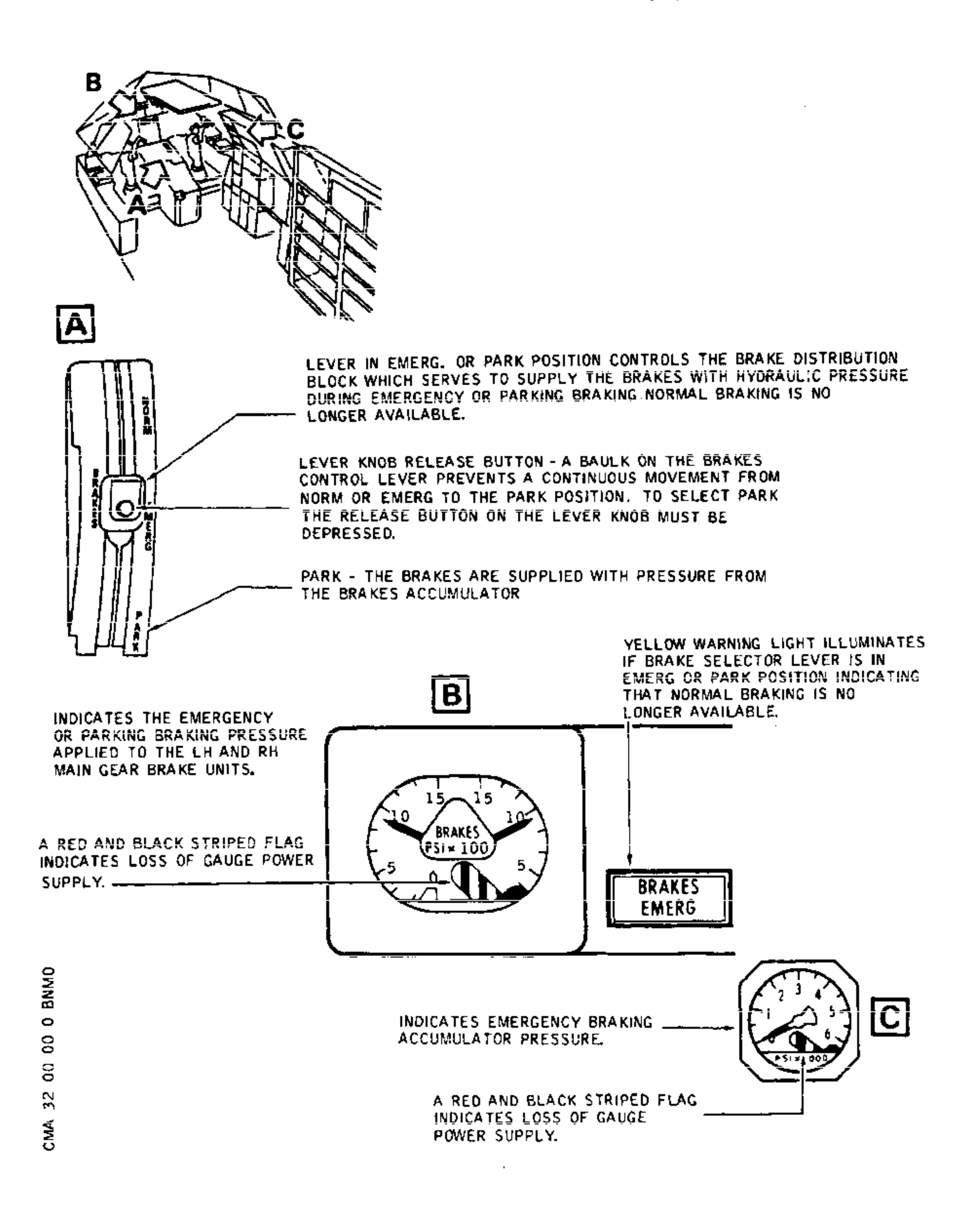
Brake Temperature and Cooling
Control and Indicating
Figure 022



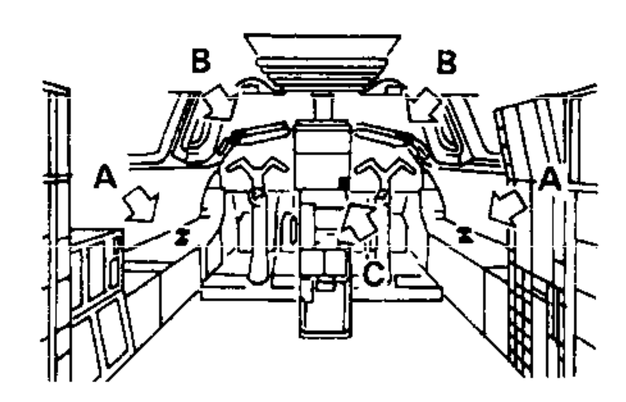


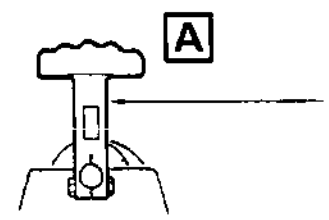


R
Brake Temperature and Cooling Control and Indicating
Figure 023

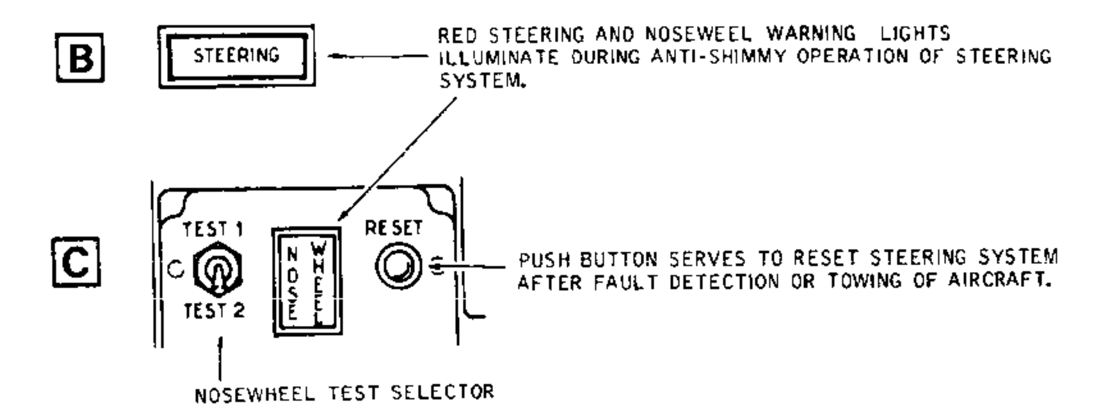


Emergency/Parking Braking
Control and Indicating
Figure 024





NOSEWHEEL STEERING CONTROL HANDLES : RETURN AUTOMATICALLY TO NEUTRAL POSITION WHEN RELEASED. NOSEWHEELS RESPOND TO CONTROL BUT WITH SLIGHT TIME LAG.



NOSEWHEEL TEST SELECTOR

TEST 1 - TESTS OPERATION OF THE FIRST MONITORING CHANNEL OF THE NOSEWHEEL STEERING ELECTRIC CONTROL WHICH MONITORS DISCREPANCIES THAT MAY ARISE BETWEEN THE STEERING HANDLE CONTROL INPUT SIGNAL AND POSITION OF NOSEWHEELS.

TEST 2 - TESTS OPERATION OF THE SECOND MONITORING CHANNEL OF THE NOSEWHEEL STEERING ELECTRIC CONTROL WHICH DETECTS NOSEWHEEL STEERING RUNAWAY.

EACH MONITORING CHANNEL IS ASSOCIATED WITH A SHUT-OFF VALVE WHICH, WHEN ENERGIZED, INHIBITS THE CONTROL BY CUTTING HYDRAULIC PRESSURE.

WHEN THE NOSEWHEEL TEST SELECTOR IS RELEASED IT RESETS THE NOSEWHEEL CONTROL SYSTEM.

CMA 32 00 00 0 BQMO

Nosewheel Steering Control and Indicating
Figure 025

7. External Safety Check

Wheel chocks	In position
Nose and main landing gears	Clear of obstacles

8. Flight Compartment Safety Check

L/Gear Emergency control lever	NEUTRAL and guarded
L/Gear Normal control lever	DOWN
GEAR O/RIDE	Guarded, snapwire unbroken, PRESS push-button visible

9. Flight Compartment Preparation

R **On A/C 001-006

LANDING GEAR FAULT ANNUNCIATOR lights	Off
Brakes accumulator pressure gauge	Reading normal, no flag visible
GROUND HYD CHECK OUT panel, either one of the PUMP switches	ON. Brake accumulator pressure increases
BRAKES TEMP 1, 2, 3, 4 FWD and REAR lights (8)	Off
WHEELS O/HEAT light (red)	Off
BRAKE FANS switch	ON
- 1, 2, 3, 4 FWD and REAR lights	Off
- WHEELS O/HEAT light (red)	Off
BRAKES TEMP TEST pushbutton	Press and hold
- BRAKES TEMP 1, 2, 3, 4 FWD and REAR lights (red) (8)	On
- WHEELS O/HEAT light (red)	On
BRAKES TEMP TEST pushbutton	Released
LH SHORT, UPPER LOCKS and RH SHORT lights (amber)	Off
Landing gear transit lights (red) (4)	Off
LH, NOSE, T and RH arrow lights (green)	On
NOSE WHEEL light (red)	On

ANTI-SKID R lights (8)	Off
TEST 1	Hold then release
- R lights (white) (8)	On then off
TEST 2	Hold then release
- R lights (white) (8)	On then off
Brake selector lever	NORM, then depress rudder pedals
- BRAKES dual pressure gauge	0
- BRAKES EMERG light (yellow)	Off
- BRAKES FAIL light (red)	On
Brake selector lever	PARK, rudder pedals released
- BRAKES dual pressure gauge	3000 psi approx. No failure flag visible
- BRAKES FAIL light (red)	Off
- BRAKES EMERG light (yellow)	On

GENERAL - SERVICING

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. Precautions to be Observed when Handling ORONITE M2.V Hydraulic Fluid

WARNING: UNDER NO CIRCUMSTANCES MUST ORONITE M2.V HYDRAULIC FLUID BE CONTAMINATED BY WATER OR ANY OTHER FLUID.

ORONITE M2.V hydraulic fluid must be handled with great care, in a well ventilated atmosphere.

It is advisable to wear suitable goggles. However, if any fluid splashes into the eyes, rinse them immediately with water and consult the medical staff.

All equipment used for handling hydraulic fluid must always be perfectly clean.

2. Safety Precautions to be Taken During Work on Aircraft

WARNING : IN ORDER TO MINIMIZE THE RISK OF INJURY OR DEATH TO PERSONNEL DURING WORK IN LANDING GEAR AND DOOR TRAVEL RANGES, THE FOLLOWING PRECAUTIONS SHALL BE TAKEN.

A. Make certain that safety devices are in position.

(1) On main landing gear telescopic brace struts and shortening locks (Ref. Fig. 301) RB

(2) On nose landing gear drag strut and interphone box (Ref. Fig. 302)

B. Make certain that wheel chocks are in position

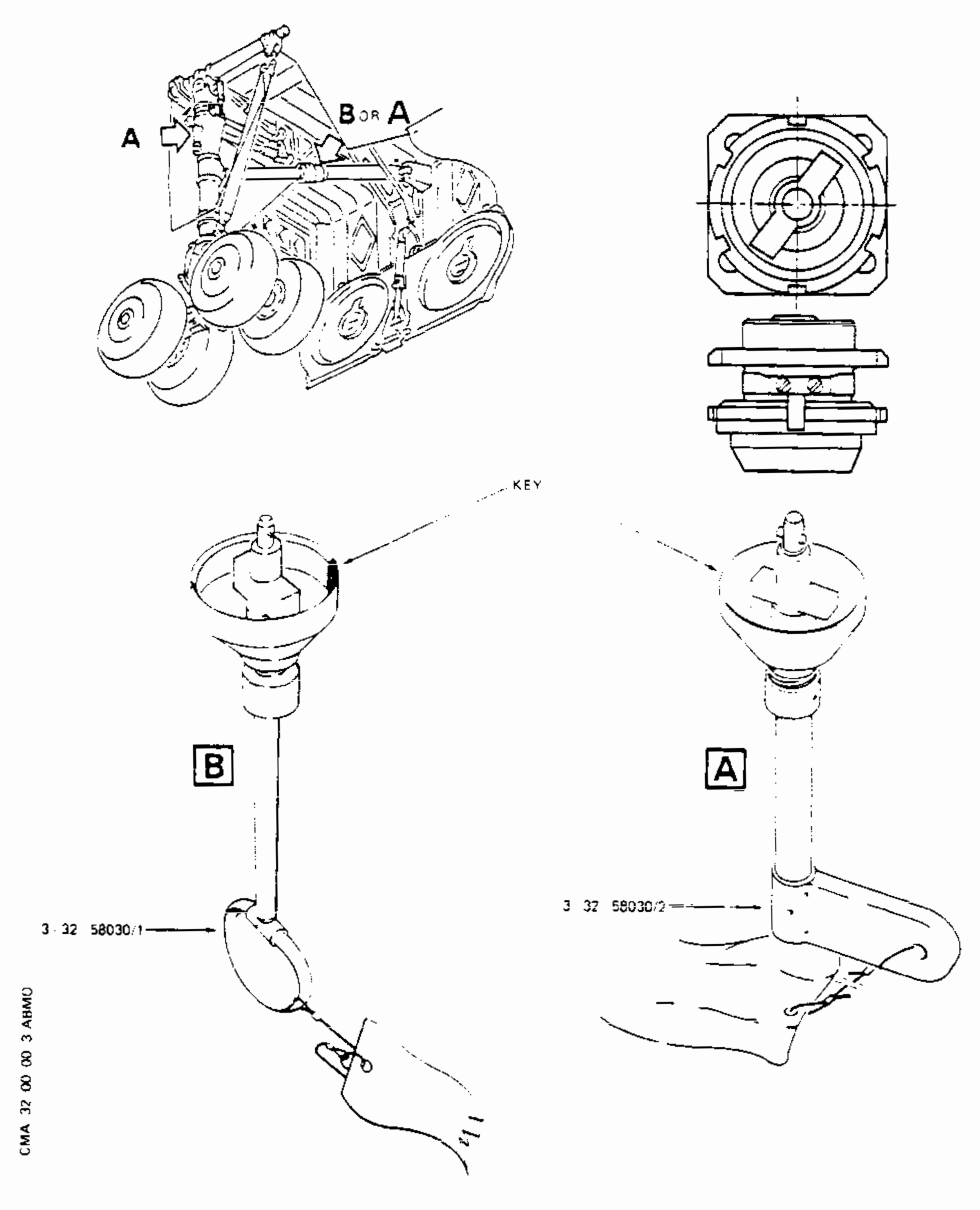
C. On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

D. On centre console, make certain that landing gear Emergency control lever is in NEUTRAL position.

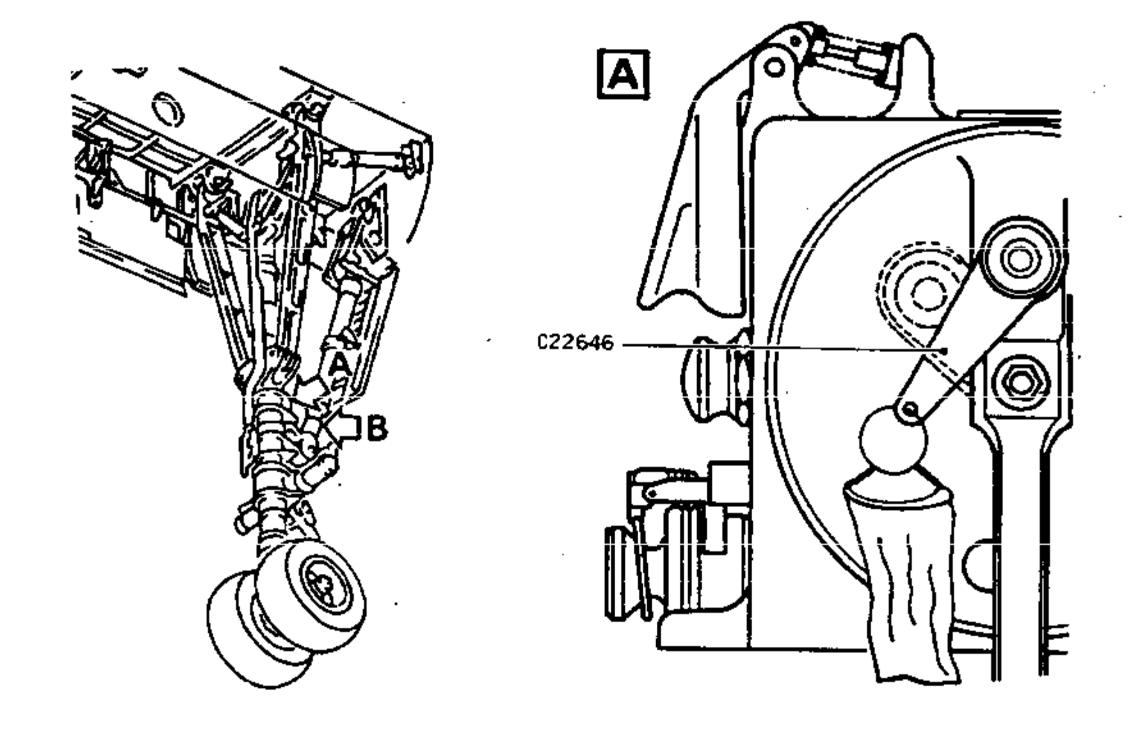
E. When job necessitates opening of landing gear doors or landing gear manoeuvres, position safety barriers prohibiting access to landing gear and door travel ranges (Ref. Fig. 303)

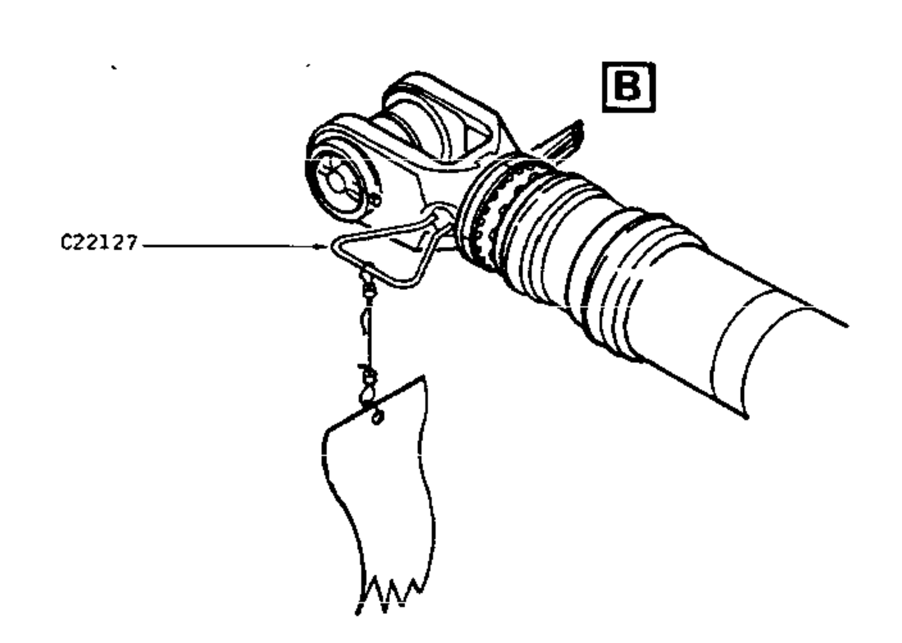
F. Before starting work on a unit :

- Make certain that relevant hydraulic systems and associated hydraulic tanks are depressurized.
- Make certain that relevant electrical circuits are isolated.



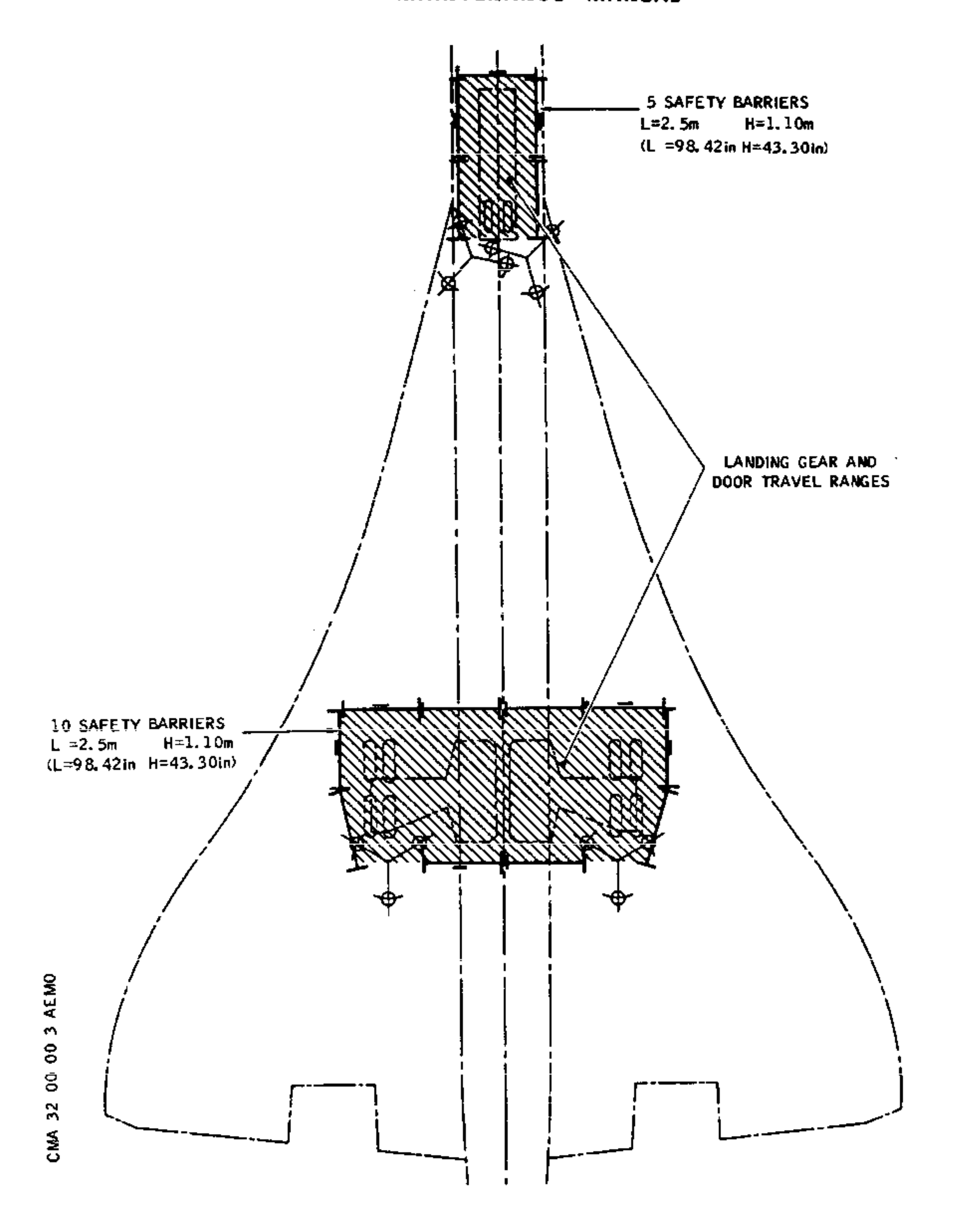
R Groung Safety Devices - Main Landing Gear B
Figure 301





CMA 32 00 00 3 ACMO

Ground Safety Devices - Nose Landing Gear
Figure 302



Positioning of Safety Barriers Around Landing Gear
and Door Travel Ranges
Figure 303

3. Landing Gear Door Ground Opening

A. Nose Gear Door Ground Opening

(1) Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000

(2) Prepare

(a) Take the precautions described in the previous WARNING paragraph.

(b) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(c) On centre console, make certain that landing gear Emergency control lever is in NEUTRAL position.

(d) Make certain that visor is not uplocked.

(e) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

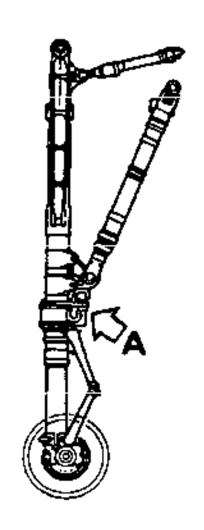
(f) Make certain that the following circuit breakers are set :

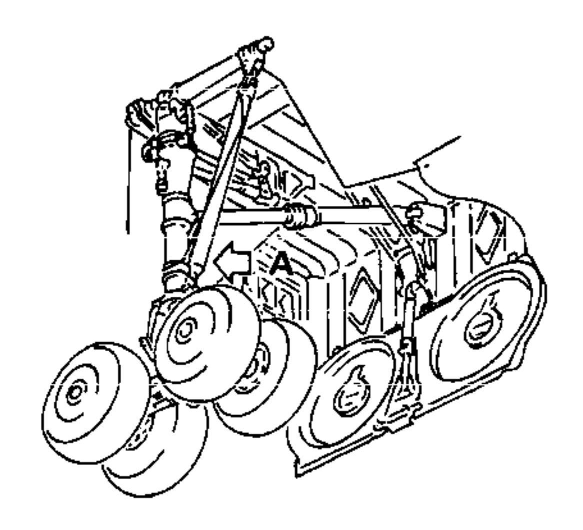
SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

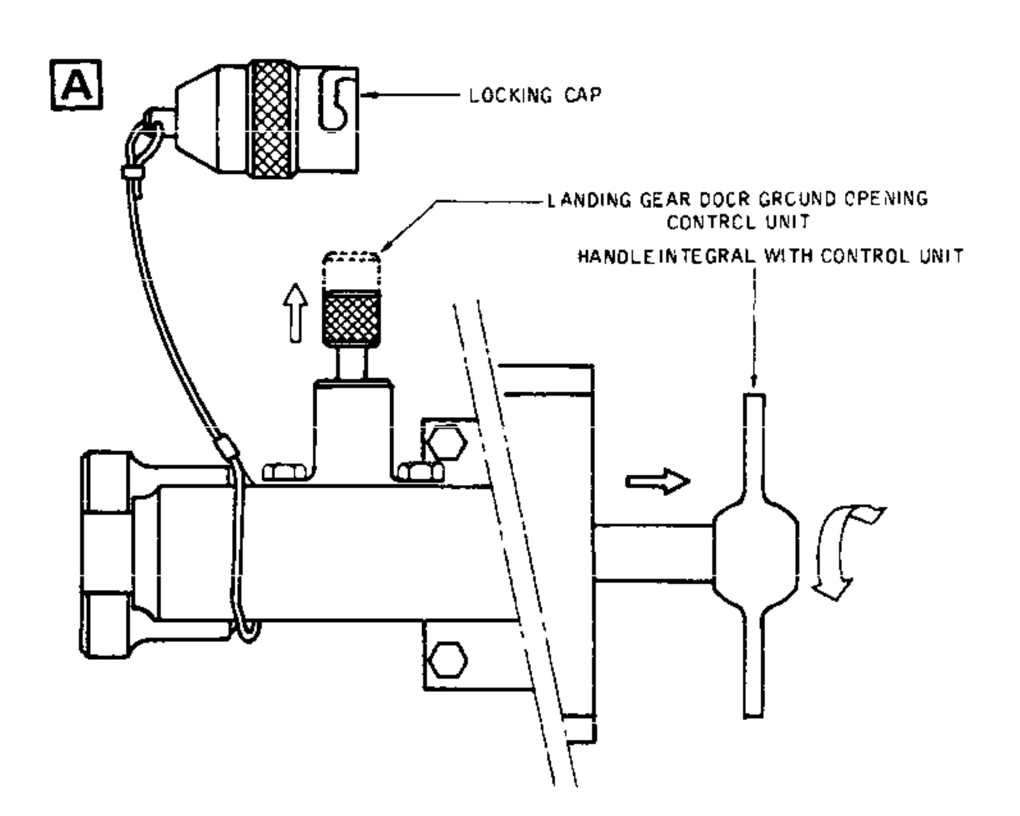
(3) Main door ground opening (Ref. Fig. 304)

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE

LH LANDING GEAR ONLY







CMA 32 00 00 3 AJMO

Landing Gear Doors - Ground Opening
Figure 304

CLEAR.

(a) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(b) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(c) On nose landing gear leg, remove locking cap from landing gear door operating handle.

(d) Turn operating handle to open position, indicator plate showing red.

(d1) The two nose landing gear doors open simultaneously.

(d2) On First Officer's instrument panel, on gears position indicating unit, red warning light corresponding to green NOSE arrow illuminates.

(e) Install locking cap on landing gear door operating handle.

(f) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(g) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(h) Install safety sleeves on nose landing gear door actuating jacks.

(4) Main door closing (Ref. Fig. 304)

(a) Remove safety sleeves from nose landing gear door actuating jacks.

(b) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(c) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(d) On nose landing gear leg, remove locking cap from landing gear door operating handle.

(e) Turn operating handle to close position, indicator plate showing white.

(e1) The two nose landing gear doors close simultaneously.

(e2) On First Officer's instrument panel, on gears position indicating unit, red warning light corresponding to green NOSE arrow extinguishes.

(f) Install locking cap on landing gear door operating handle.

(g) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(h) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Close-Up

(a) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(b) Close access doors.

B. Main Landing Gear Door Opening

(1) Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Doors Actuating Cylinder	D921317000

(2) Prepare

(a) Take the precautions described in the previous WARNING paragraph.

(b) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(c) On centre console, make certain that landing gear Emergency control lever is in NEUTRAL position.

(d) Make certain that visor is not uplocked.

(e) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(f) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(3) Main Door Opening (Ref. Fig. 304)

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(a) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(b) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(c) On LH main landing gear leg, remove locking cap from landing gear door operating handle.

(d) Turn operating handle to open position : indicator plate showing red.

(d1) The two main landing gear doors open simultaneously.

(d2) On First Officer's instrument panel, on gears position indicating unit, red warning lights corresponding to green LH and RH arrows illuminate.

(e) Install locking cap on landing gear door operating handle.

(f) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(g) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(h) Install safety collars on landing gear door actuating jacks.

(4) Main Door Closing (Ref. Fig. 304)

(a) Remove safety collars from landing gear door actuating jacks.

(b) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(c) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(d) On LH main landing gear leg, remove locking cap from landing gear door operating handle.

(e) Turn landing gear door operating handle to close position; indicator plate showing white.

(e1) The two main landing gear doors close simultaneously.

(e2) On First Officer's instrument panel, on gears position indicating unit, red warning lights corresponding to green LH and RH arrows extinguish.

(f) Install locking cap on landing gear door operating handle.

(g) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(h) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Close-Up

(a) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(b) Close access doors.

GENERAL - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

This chapter deals with procedures for the removal/installation of hydraulic and electrical components which do not require any special precautions.

B NOTE: Removal of landing gear hydraulic components causes loss
B of system fluid with consequent ingress of air. Where
B possible these components should be primed with fluid on
B refitment. Although priming will assist in efficient
B system operation, components such as NLG selectors cause
B a large volume of fluid to be lost from selector supply
B lines. A similar situation could also arise from
B multiple pipe assy breakdowns. Air in landing gear
B system can cause intermittent gear operation. To prevent
B this situation arising it is necessary to carry out a
B series of landing gear functions before A/C returns to
RB service (Ref. 32-30-11, Adjustment/Test).

2. Hydraulic Equipment in the Nose Landing Gear Bay : Zones 127 - 128

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

2. Hydraulic Equipment in the Nose Landing Gear Bay : Zones 127 - 128 Cont'd

DESCRIPTION	PART NO.
Safety Sleeve-Nose Landing Gear Doors	E925002000
Access platform 4.44 m (14 ft. 7 in.)	
Circuit Breaker Safety Clips	
Blanking Plugs/Caps	
Hydraulic Fluid Container	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Check that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on the nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

(11) Display a warning notice in the flight compartment prohibiting operation of landing gear control levers.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety sleeves on landing gear door actuating jacks.

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

C. Remove

Remove component.

D. Preparation of Replacement Component

Not applicable.

E. Install

Install replacement component.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE. IF REQUIRED FOR REINSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

F. Tests

Lines connected to the component must be carefully checked for evidence of external leakage when pressurizing for the first time and on completion of tests.

G. Close-up.

(1) Remove hydraulic fluid container.

(2) Remove safety sleeves.

(3) Remove access platform.

(4) Remove safety clips and tags and reset circuit breakers.

(5) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) Close doors by operating handle on nose landing gear leg. Install locking cap.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(12) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(13) Close access doors.

(14) Remove warning notices.

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3. Hydraulic Equipment in Main Landing Gear Bays : Zones 571, 671, 572, 672

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Circuit Breaker Safety Clips	
Access Platform 4.44 m (14 ft. 7 in.)	
Blanking Plugs/Caps	
Hydraulic Fluid Container	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Check that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

(11) Display a warning notice in flight compartment prohibiting operation of landing gear operating levers.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety collars on landing gear door actuating jacks.

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

C. Remove

Remove component

D. Preparation of Replacement Component

Not applicable.

E. Install

Install replacement component.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE. IF REQUIRED FOR REINSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

F. Tests

Lines connected to the component must be carefully checked for evidence of external leakage when pressurizing for the first time and on completion of tests.

G. Close-Up

(1) Remove hydraulic fluid container.

(2) Remove safety collars.

(3) Remove access platform.

(4) Remove safety clips and tags and reset circuit breakers.

(5) Pressurize Green and Yellow hydraulic tanks (Ref. (Ref. 29-13-00, Servicing).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) Close doors by operating handle on LH main landing gear leg. Install locking cap.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(12) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(13) Close access doors.

(14) Remove warning notices

4. Hydraulic Equipment in Tail Gear Bay : Zones 313, 314

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 4.44 m (14 ft. 7 in.)	
Blanking Plugs/Caps	
Locking Sleeve - Tail Landing Gear Actuating Jack	D925406000
Circuit Breaker Safety Clips	
Hydraulic Fluid Container	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position and prohibit actuation by displaying a warning notice in flight compartment.

(3) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOOR CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

(4) Install equipment D925406000.

(5) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(6) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

C. Remove

Remove component

D. Preparation of Replacement Component

Not applicable.

E. Install

Install replacement component.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE.
IF REQUIRED FOR REINSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

F. Tests

Lines connected to the component must be carefully checked for evidence of external leakage when pressurizing for the first time and on completion of tests.

G. Close-Up

(1) Remove hydraulic fluid container.

(2) Remove equipment D925406000.

(3) Remove access platform.

(4) Remove safety clips and tags and reset circuit breakers

(5) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing) and replenish as required (Ref. 12-12-29).

(6) Close access doors.

(7) Remove warning notices.

5. Hydraulic Equipment in Zones 151, 152, 153, 154

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 4.44 m (14 ft. 7 in.)	
Blanking Plugs/Caps	
Hydraulic Fluid Container	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position and prohibit actuation by displaying a warning notice in flight compartment.

(3) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(4) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(5) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

C. Remove

Remove component

D. Preparation of Replacement Component

Not applicable.

E. Install

Install replacement component.
Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

F. Tests

Lines connected to the component must be carefully checked for evidence of external leakage when pressurizing for the first time and on completion of tests.

G. Close-Up

(1) Remove hydraulic fluid container.

(2) Remove safety clip and tag and reset circuit breaker.

(3) Remove access platform.

(4) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing) and replenish as required (Ref. 12-12-29).

(5) Close access doors.

(6) Remove warning notices.

6. Landing Gear Relays

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 3.46 m (11 ft. 4 in.)	
Circuit Breaker Safety Clips	

B. Prepare

(1) Make certain that the aircraft electrical network is de-energized.

(2) According to relay to be removed, trip, safety and tag the following circuit breakers :

RELAY		ASSOCIATED CIRCUIT BREAKER			
COMPONENT	LOCATION	CIRCUIT BREAKER	SERVICE	PANEL	MAP REF.
G 6	2-123	G 2	UC SELECTOR RAISE CONT	15-215	A 7
		G 3	UC LOWER DOORS OPEN SUP		A 8
G 7	2-123	G 1	UC RAISE DOORS CLOSE SUP		A 6
		G 2	UC SELECTOR RAISE CONT		A 7
G 8	2-123	G 1	UC RAISE DOORS CLOSE SUP		A 6
		G 2	UC SELECTOR RAISE CONT		A 7
G 9	2-123	G 3	UC LOWER DOORS OPEN SUP		A 8
		G 4	UC SELECTOR LOWER CONT		A 9
G10	2-123	G 3	UC LOWER DOORS OPEN SUP		A 8
		G 4	UC SELECTOR LOWER CONT		A 9
G11	2-123	G 1	UC RAISE DOORS CLOSE SUP		A 6
		G 4	UC SELECTOR LOWER CONT		A 9

RELAY		ASSOCIATED CIRCUIT BREAKER			
COMPONENT	LOCATION	CIRCUIT BREAKER	SERVICE	PANEL	MAP REF.
**ON A/C ALL					
G34	3-123	G 3	UC LOWER DOORS OPEN SUP	15-215	A 8
		G 4	UC SELECTOR LOWER CONT		A 9
G35	3-123	G 3	UC LOWER DOORS OPEN SUP		A 8
		G 4	UC SELECTOR LOWER CONT		A 9
**ON A/C ALL					
G36	2-123	G 3	UC LOWER DOORS OPEN SUP	15-215	A 8
G77	3-123	G 4	UC SELECTOR LOWER CONT		A 9
**ON A/C ALL					
G79	2-123	G 2	UC SELECTOR RAISE CONT	15-215	A 7
		G 4	UC SELECTOR LOWER CONT		A 9
G86	2-123	G 2	UC SELECTOR RAISE CONT		A 7
		G 4	UC SELECTOR LOWER CONT		
**ON A/C ALL					
G100	3-123	G 92	NOSE WHEEL STEERING IND	15-215	B 6
G120	14-216	G 119	BRAKE EMERG/ACCUM/ WATER PIPE HTR CONT	25-216	B 7
G121	14-216	G 119	BRAKE EMERG/ACCUM/ WATER PIPE HTR CONT		B 7
G297	3-123	G 291	NOSE UC WEIGHT SW "A" SYS SUP	1-213	M16
G298	2-123	G 291	NOSE UC WEIGHT SW "A" SYS SUP		M16
G299	2-213	G 296	NOSE U/C W/SW "B" SUP	3-213	D 8
G300	2-123	G 292	LH UC WEIGHT SW "A"	1-213	M17

RELAY		ASSOCIATED CIRCUIT BREAKER			
COMPONENT	LOCATION	CIRCUIT BREAKER	SERVICE	PANEL	MAP REF.
			SYS SUP		
G301	2-123	G 292	LH UC WEIGHT SW "A" SYS SUP		M17
G302	2-123	G 292	LH UC WEIGHT SW "A" SYS SUP		M17
G303	2-123	G 292	LH UC WEIGHT SW "A" SYS SUP		M17
G304	2-123	G 292	LH UC WEIGHT SW "A" SYS SUP		M17
G305	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	B 8
G306	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		B 8
G307	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		B 8
G308	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		B 8
G309	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		B 8
G310	3-123	G 294	RH UC WEIGHT SW "B" SYS SUP		B 9
G311	3-123	G 294	RH UC WEIGHT SW "B" SYS SUP		B 9
G312	3-123	G 294	RH UC WEIGHT SW "B" SYS SUP		B 9
G313	3-123	G 294	RH UC WEIGHT SW "B" SYS SUP		B 9
G314	3-123	G 294	RH UC WEIGHT SW "B" SYS SUP		B 9
G315	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP	1-213	M18
G316	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		M18
G317	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		M18
G318	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		M18
G319	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		M18
G326	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	B 8

RELAY	ASSOCIATED CIRCUIT BREAKER				
COMPONENT	LOCATION	CIRCUIT BREAKER	SERVICE	PANEL	MAP REF.
G327	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		B 8
G328	2-123	G 293	LH UC WEIGHT SW & DONWLOCK "B" SYS SUP		B 8
G329	2-123	G 293	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		B 8
G330	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP	1-213	M18
G371	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		M18
G372	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		M18
G373	3-123	G 295	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		M18
1G353	14-123	1G 351	LH INBD BRAKE FAN SUP & CONT	13-216	E21
2G354	17-123	2G 352	RH OUTER BRAKE FAN SUP & CONT	14-216	F20
1G 354	14-123	1G 352	LH OUTER BRAKE FAN SUP & CONT	14-215	C 2
2G 353	17-123	2G 351	RH INBD BRAKE FAN SUP & CONT	13-215	B 1

(3) Open access door 123AB or 123BB for relays on relay boxes 2-123, 3-123, 14-123 or 17-123.

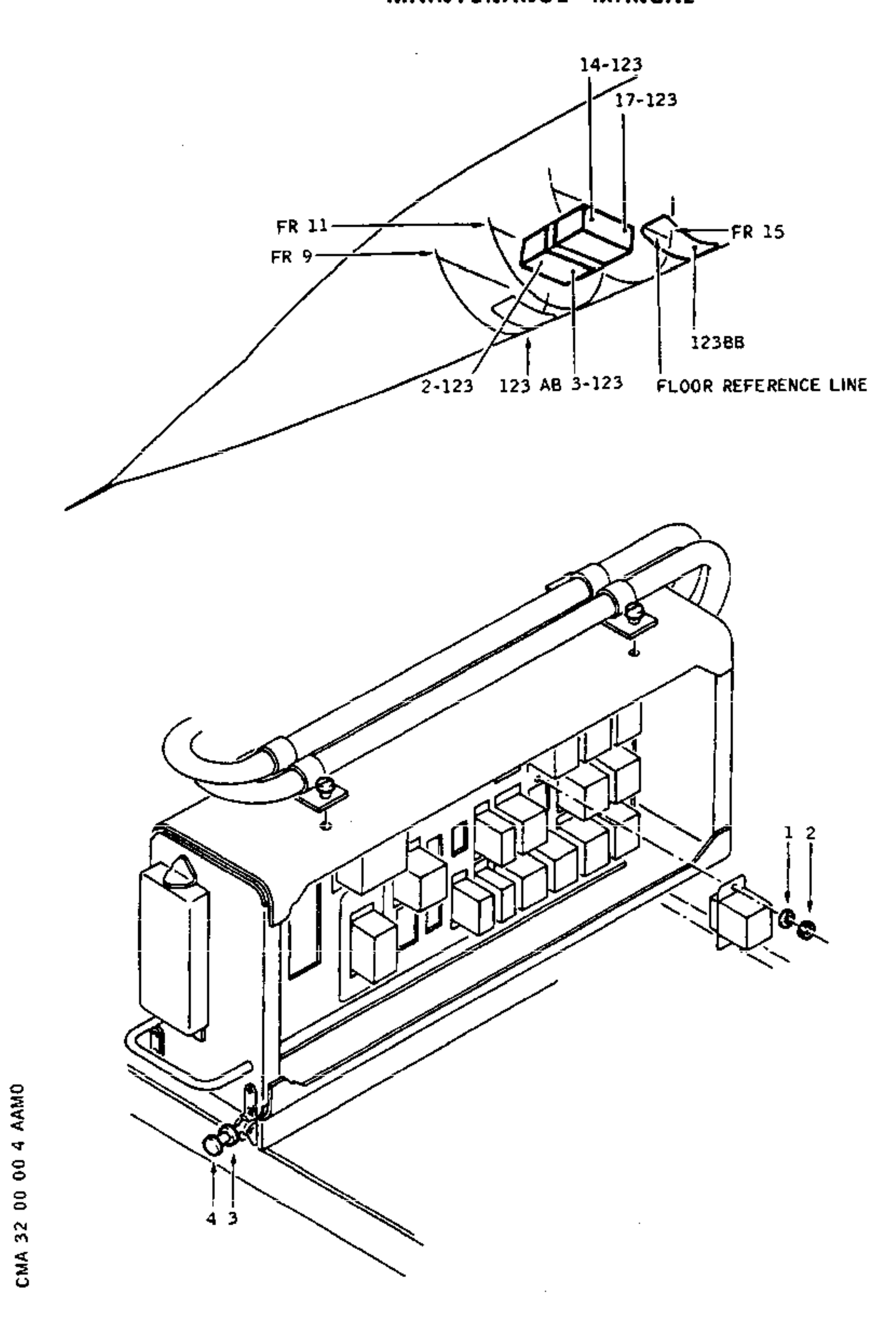
(4) Open circuit breaker panel 14-216 for access to relays G120, G121.

C. Remove

(1) Remove relays on relay box 2-123, 3-123, 14-123 or 17-123 (Ref. Fig. 401)

(a) Loosen knurled nuts (4) and disengage relay box attach fittings (3).

(b) Remove cable clips on upper surface of relay box.



Relay Box
Figure 401

(c) Slide out relay box from rack without disconnecting electrical connectors located at rear of unit.

(d) Remove nuts (2) from relay to be removed, retain washers (1) and withdraw relay.

(2) Remove relays G120, G121 (Ref. Fig. 402)

(a) On relay to be removed, remove nuts (11), retain washers (10) for reinstallation and withdraw relay.

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Install relays on relay box 2-123, 3-123, 14-123 or 17-123 (Ref. Fig. 401).

(a) Position relay and attach using washers (1) and nuts (2).

(b) Slide back relay box and attach cable clips on upper surface.

(c) Position attach fittings (3) and tighten knurled nuts (4).

(2) Install relays G120, G121 (Ref. Fig. 402)

(a) Position relay and install using washers (10) and nuts (11).

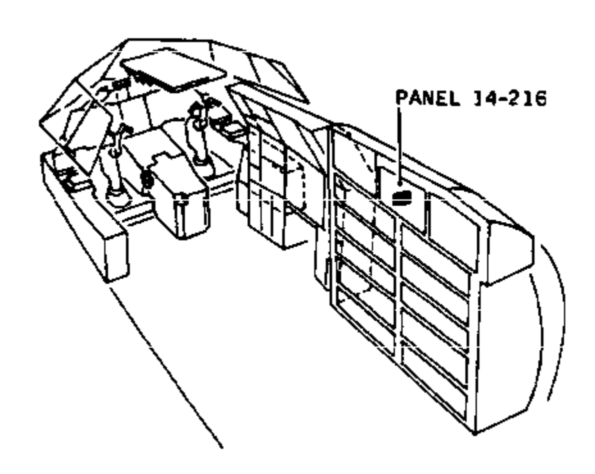
F. Adjust/Test

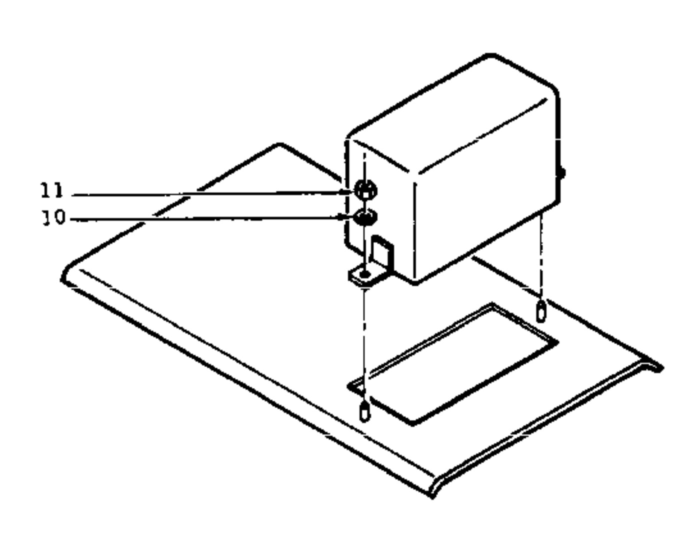
Not applicable.

G. Close-Up

(1) Remove safety clips and tags and reset circuit breakers.

(2) Close access doors and circuit breaker panel.





CMA 32 00 00 4 ACM0

Relays G120, G121
Figure 402

7. Warning Lights (G102, G103, G134, G135)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) Isolate the electrical generation and external power equipment as described in 24-00-00, Servicing.

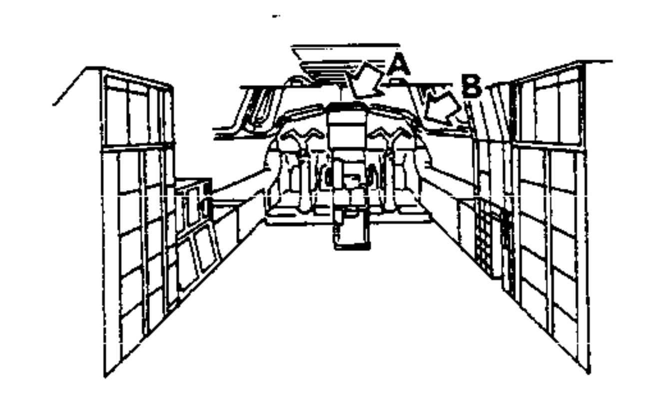
(2) According to warning light to be removed, trip, safety and tag the following circuit breakers :

WARNING LIGHT		ASSOCIATED CIRCUIT BREAKER			
COMPONENT	LOCATION	CIRCUIT BREAKER	SERVICE	PANEL	MAP REF.
R G135	6-211	G 131	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	S16
R G134	6-211	G 132	WHEEL BRAKE "B" SYS CONT	3-213	D 9
R G102	3-211	G 92	NOSE WHEEL STEERING IND	15-215	B 6
R G103	3-212	G 92	NOSE WHEEL STEERING IND	15-215	B 6

(3) To remove BRAKES FAIL warning light G135 and BRAKES EMERG warning light G134 remove centre instrument panel sub panel No.1 as follows :
- remove access panel 211AS
- disconnect and cap sub panel electrical connectors
- remove screws (18) and pull out sub panel.

C. Remove (Ref. Fig. 403)

(1) If necessary, remove cable ties to facilitate access to terminals.



A

PANEL

BRAKES FAIL

BRAKES EMERG

T/O MONITOR

B

SUB PANEL No. 1

18

B

19 RETAINING SPRINGS

20 MODULE CLAMP

WARNING LIGHT 21 MODULE

CMA 32 00 00 4 AEMO

Warning Light
Figure 403

(2) Disconnect electrical cables from terminals. On warning lights fitted with socket-type terminals use appropriate insertion/extraction tool.

(3) Disengage retaining springs (19) at the rear of the module clamp (20) and withdraw the module (21) from the front of the panel and the clamp from the rear.

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Position module clamp (20) at rear of panel and insert warning light module through the aperture from the front.
Hold warning light module firmly against the front of the panel and press on the clamp (20) from the rear until retaining springs engage the recess in the warning light module body.

(2) Connect warning light electrical cables in accordance with cable identifications and applicable wiring diagram.

(3) Install cable ties as necessary.

(4) If warning lights G134 and G135 have been replaced, install sub panel No.1 with screws (18).
Connect electrical connectors at rear of panel.

(5) Close access panel 211AS.

F. Test

(1) Remove safety clips and tags and reset the circuit breakers.

(2) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

NOTE : Make certain that Green hydraulic system is depressurized (Ref. 29-11-00, Servicing).

(3) Make certain that STEERING warning lights come on.

(4) On centre console, place LIGHTS TEST switch in TEST position then release.

- On centre instrument panel BRAKES FAIL and BRAKES

EMERG warning lights come on during pulse in TEST position.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

8. Control Switches

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) Isolate the electrical generation and external power equipment as detailed in 24-00-00, Servicing.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH INBD BRAKE FAN SUP & CONT	13-215	2G 351	B 1
RH INBD BRAKE FAN SUP & CONT	13-216	1G 351	E21
LH OUTER BRAKE FAN SUP & CONT	14-215	1G 352	C 2
RH OUTER BRAKE FAN SUP & CONT	14-216	2G 352	F20

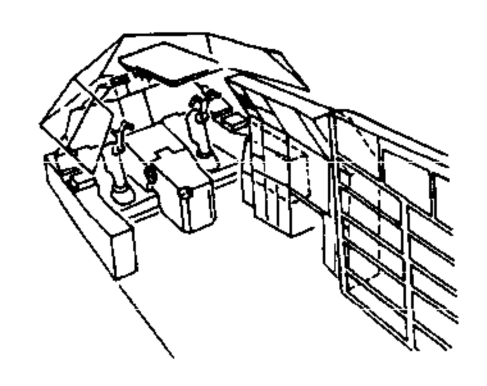
(3) Release quick attach-detach fasteners and open panel 12-214.

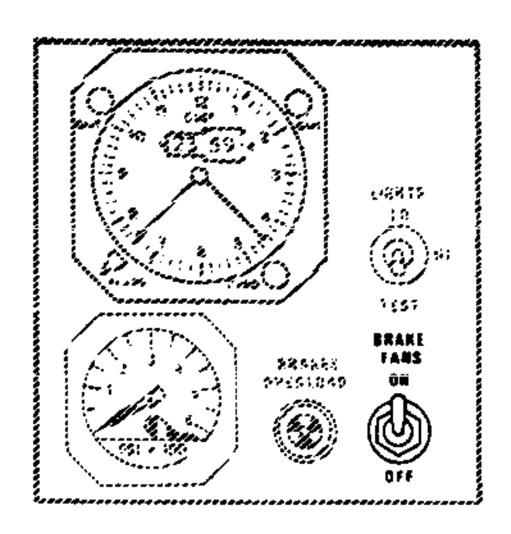
C. Remove (Ref. Fig. 404)

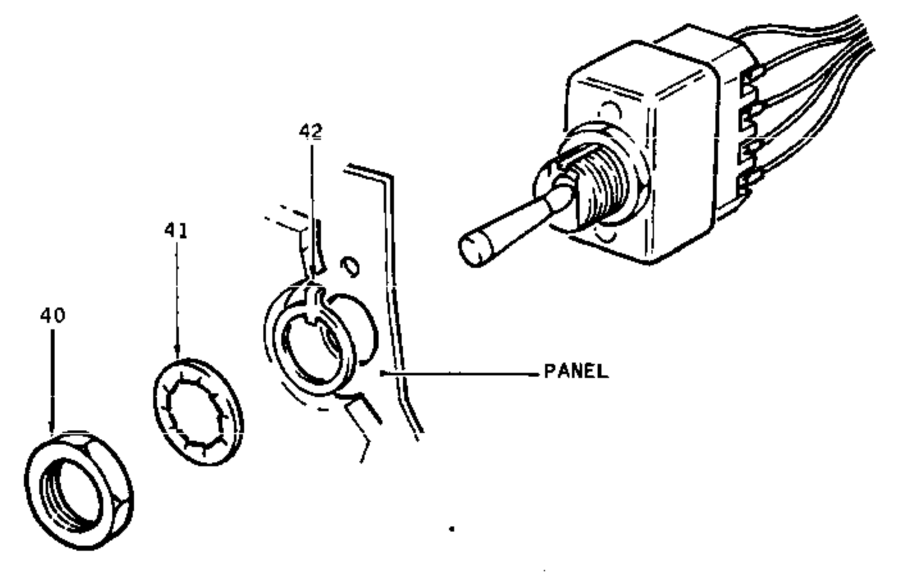
(1) If necessary remove cable ties to facilitate access to terminals.

(2) Disconnect electrical cables from terminals using appropriate insertion/extraction tool.

(3) Remove nut (40), retain washer (41) and tab washer (42) for reinstallation and withdraw switch from rear of panel.







CMA 32 00 00 4 AJMO

Control Switches
Figure 404

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Position switch and install using tab washer (42) washer (41) and nut (40).

(2) Connect control switch electrical cables in accordance with cable identifications and applicable wiring diagram.

(3) Install cable ties as necessary.

(4) Close and secure panel making certain that electrical cables are correctly positioned.

F. Test

(1) Remove safety clips and tags and reset the circuit breakers.

(2) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) Place BRAKE FANS control switch in ON position and make certain that brake fans operate.

(4) Place BRAKE FANS control switch in OFF position and make certain that brake fans stop.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

R 9. Tail Landing Gear - De-activation Procedure in the Event of an
R Electrical Failure or of a Mechanical Failure

A. General

Procedures to be implemented in the event of an electrical failure in the retraction circuit or a mechanical failure in the uplock system.

B. De-activation procedure after an electrical failure in the retraction circuit.

(1) Equipment and Materials

DESCRIPTION	PART NO.
Access platform 3.85 m (12 ft 6 in)	-
Hydraulic fluid container	-
Circuit breaker safety clips	-
Hydraulic ground power unit	EMH398E

(2) Prepare

(a) Take the precautions described in the previous WARNING paragraph.

(b) Make certain that landing gear Normal control lever is in NEUTRAL position and prohibit its operation by displaying a warning notice.

(c) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	C 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

R (d) Depressurize Green and Yellow hydraulic systems
R (Ref. 29-11-00 and 29-21-00, Servicing).

R (e) Depressurize Green and Yellow hydraulic tanks

R (f) Position access platform.

R (g) Remove tail gear doors (Ref. 32-71-12, Removal/
R Installation).

R (3) Procedure

R (a) Disconnect electrical connector from tail gear
R selector (G28) - Cap connector.

R (b) Disconnect hydraulic line on the actuating
R cylinder retraction side.

R (c) Connect hydraulic ground power unit (or auxiliary
R hydraulic pump) to the hydraulic line on
R the actuating cylinder retraction side.

R (d) Release actuating cylinder from downlocked
R position.

R (e) Lock actuating cylinder in retracted position.

R (f) Connect actuating cylinder hydraulic line.

R (4) Close-Up

R (a) Remove safety clips and tags and reset circuit
R breakers.

R (b) Connect the electrical ground power unit and
R energize the aircraft electrical network
R (Ref. 24-41-00, Servicing).

R (c) Check that no indicator light concerning the
R tail gear is on

R (d) Pressurize Green hydraulic tank (Ref. 29-13-00,
R Servicing) and Green hydraulic system
R (Ref. 29-11-00, Servicing).

R (e) Check hydraulic line for evidence of external
R leakage on actuating cylinder retraction side.

R (f) Depressurize Green hydraulic system
R (Ref. 29-11-00, Servicing).

R (g) Replenish the Green hydraulic tank as required
R (Ref. 12-12-29).

R (h) De-energize the aircraft electrical network and
R disconnect the electrical ground power unit.

R (i) Remove hydraulic fluid container.

R (j) Make certain that working area is clean and clear
R of tools and miscellaneous items of equipment.
R Make certain that no trace of hydraulic fluid
R remains.

R (k) Close access doors.

R (l) Remove access platform.

R (m) Remove warning notices.

R (n) Install a notice in flight compartment informing
R the flight crew that the tail gear is de-
R activated.

R C. De-activation Procedure after a Mechanical Failure in Uplock
R System

R (1) Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 3.85 m (12 ft. 6 in.)	
Hydraulic Fluid Container	
Circuit Breaker Safety Clips	
Jury Strut	D921724000
Blanking Plugs/Caps	NSA8419 AN929
Electrical Ground Power Unit	
Hydraulic Ground Power Unit	EMH398E

R (2) Prepare

R (a) Take the precautions described in the previous
R WARNING paragraph.

R (b) Make certain that landing gear Normal control lever is in NEUTRAL position and prohibit its operation by displaying a warning notice.

R (c) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	C 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT	15-215	G 2	A 7
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
UC SELECTOR LOWER CONT	15-215	G 4	A 9

R (d) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00 and 29-21-00, Servicing).

R (e) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

R (3) Procedure

R (a) Remove actuating cylinder (Ref. 32-31-82, Removal/ Installation).

R (b) Remove actuating cylinder hydraulic hoses.

R (c) Blank off open line ends to actuating cylinders.

R (d) Manually place tail gear in retracted position and install jury strut No.D921724000 to replace the actuating cylinder.

R (e) Disconnect and cap tail gear selector (G28) connector.

R (4) Close-Up

R (a) Remove safety clips and tags and reset circuit breakers.

R (b) Connect electrical ground power unit and energize the aircraft electrical network

R (Ref. 24-41-00, Servicing).

R (c) Check that no indicator light concerning the tail
R gear is on.

R (d) Pressurize Yellow hydraulic tank (Ref. 29-13-00,
R Servicing) and system (Ref. 29-21-00, Servicing).

R WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES
R ARE CLEAR.

R (e) On centre console place Emergency control lever in
R DOORS position. Nose and main gear doors open.

R (f) Check for leakage at blanking plug on Yellow
R hydraulic system.

R (g) On centre console place Emergency control lever in
R NEUTRAL position.

R (h) Depressurize Yellow hydraulic system
R (Ref. 29-21-00, Servicing).

R (i) On LH main landing gear leg and nose landing gear
R leg, remove locking cap and place operating
R handles in open position.

R WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE
R CLEAR.

R (j) On First Officer's instrument panel, place landing
R gear Normal control lever in DOWN position.

R (k) Pressurize Green tank (Ref. 29-13-00, Servicing)
R and pressurize Green system (Ref. 29-11-00,
R Servicing).

R (l) Check for external leakage at blanking plugs on
R Green system lines and at tail gear selector
R (G28).

R (m) Close doors by operating handles on LH main
R landing gear leg and on nose landing gear leg.
R Install locking cap.

R (n) On First Officer's instrument panel, place landing
R gear Normal control lever in NEUTRAL position.

R (o) Depressurize Green hydraulic system
R (Ref. 29-11-00, Servicing).

(p) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(q) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(r) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(s) Remove hydraulic fluid container.

(t) Close access doors.

(u) Remove access platform.

(v) Remove warning notices.

(w) Install a notice in flight compartment informing the flight crew that the tail gear is de-activated.

After SB-079 01 For A/C 001-007

10. Under Inflation Detection System De-activation Procedure

A. General

Procedure to be implemented to de-activate the under inflation detection system.

B. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Warning Notices	

C. Procedure

(1) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
TYRE DEFLATION DETECTION SYSTEM SUP	14-215	G 431	C 5
TYRE DEFLATION DETECTION SYSTEM IND	15-215	G 430	E 9

D. Close-Up

(1) Install a temporary placard in the flight compartment to warn the flight crew that the under inflation detection system is inoperative.

CAUTION : IF THE FLAT TYPE DETECTION UNIT IS REMOVED IT IS IMPERATIVE THAT THE M/CG WARNING BE MAINTAINED.
THIS IS ACHIEVED BY INSTALLING SHUNTS BETWEEN CONNECTOR G439 (ZONE 5/216) TERMINALS A39 TO A50 AND BETWEEN TERMINALS B39 TO B47.
THE SHUNTS CAN BE MOUNTED INSIDE A 1/2 ATR SHORT CASE, EQUIPPED WITH A DPX2 MA-57P-34B-0001 CONNECTOR AND INSTALLED IN PLACE OF THE DETECTION UNIT.

11. Test of Tail Landing Gear, Aircraft on Wheels

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-

B. Prepare

(1) Aircraft on its wheels, make certain that safety devices are in position on brace strut and shortening mechanism of both main landing gear and on nose landing gear drag strut.

(2) Make certain that landing gear doors are closed and that key 734116 is not inserted in landing gear door ground opening microswitch box on LH main landing gear leg.

R (3) Make certain that visor is NOT locked up and that the visor control agrees with visor position.

(4) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

WARNING: MAKE CERTAIN THAT ACTUATING CYLINDER SAFETY COLLAR IS NOT INSTALLED.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Test

(1) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSES SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(2) In zone 2-123, remove protective cap from test connector UT 1837.
Place a shunt between the following terminals:

- UT 1837-14A and UT 1837-12A
- UT 1837-14B and UT 1837-6B

(3) Remove safety clips and tags and reset circuit breakers listed in 11.C.(1).

(4) Pressurize Green hydraulic system (minimum pressure and flow) (Ref. 29-11-00, Servicing).

(5) On First Officer's instrument panel, place the landing gear Normal control lever in DOWN position.

(6) Check that tail landing gear retracts freely and uplocks. On gear position indicating unit, red light corresponding to green T arrow comes on during tail gear transit and goes off when tail gear is uplocked.

(7) On First Officer's instrument panel, return the landing gear Normal control lever to NEUTRAL position.

(8) Trip, safety and tag circuit breakers listed in 11.C.(1).

(9) On test connector UT 1837, remove shunts installed previously and position them between the following terminals:

- UT 1837-9A and UT 1837-12A
- UT 1837-9B and UT 1837-6B

(10) Remove safety clips and tags and reset circuit breakers listed in 11.C.(1).

(11) On First Officer's instrument panel, place the landing gear Normal control lever in DOWN position.

(12) Check that tail landing gear extends freely, and downlocks. On gear position indicating unit, red light corresponding to green T arrow comes on during tail gear transit and goes off when tail gear is down locked. Green T arrow comes on.

(13) On First Officer's instrument panel, return the landing gear Normal control lever to NEUTRAL position.

(14) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) Trip, safety and tag circuit breakers listed in 11.C.(1).

(16) Remove the two shunts from test connector UT 1837 and install protective cap.

(17) Remove safety clips and tags and reset circuit breakers listed in 11.C.(1).

D. Close Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

12. Procedure to Retract and Isolate the Tail Landing Gear - Without Removal of the Tail Landing Gear Side Doors

A. General

This procedure is to allow the tail landing gear to be retracted and isolated, whenever this is required for operational reasons.

This is done by energizing relay G10, gear door relay, of the tail gear hydraulic selector G28, by use of electrical shunts.

Compliance with this procedure ensures that the tail gear will not be operative during normal or abnormal aircraft landing gear retraction/extension cycles.

This procedure will have to be reversed to enable the gear to operate normally (Ref. Servicing).

B. Equipment and Materials

DESCRIPTION	PART NO.
Access platform 12 ft 6 in (3.85 m)	-
Electrical ground power unit	-
Circuit breaker safety clips	-

C. Prepare

(1) Take the precautions described on Page 401.

(2) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) On the First Officer's instrument panel, verify that the landing gear Normal control lever is in the NEUTRAL position.

(4) On the centre console, verify that the landing gear Standby Lowering control lever is in the NEUTRAL position.

(5) Make certain that the visor is NOT locked up, and that the visor control agrees with the visor position.

(6) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSES SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(7) Depressurize the Green hydraulic system (Ref. 29-11-00, Servicing). Ensure Yellow hydraulic system is not pressurized.

(8) Ensure that the landing gear safety devices are in place on:

Main Gear - at LH and RH side stays and at LH and RH shortening mechanisms.

Nose Gear - at brace strut.

NOTE: Make certain that the safety locking sleeve of the tail gear actuating cylinder is NOT installed.

(9) Using the ground pressurizing pump, pressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Open the main and nose landing gear doors:

(a) Remove the locking cap and open the main landing gear doors by operating the handle on the LH main landing gear leg (Ref. Servicing).

(b) Remove the locking cap and open the nose landing gear doors by operating the handle on the nose landing gear leg (Ref. Servicing).

(c) On the First Officer's instrument panel, on the landing gear position indicating unit, red lights, corresponding to the LH, NOSE and RH arrows will illuminate.

(11) On the First Officer's instrument panel, place the landing gear Normal control lever in the NEUTRAL position.

(12) De-energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(13) Display a warning notice in the flight compartment prohibiting operation of the landing gear operating levers.

(14) Remove access panel 313AB from the tailcone and gain access to the hydraulic selector valve G28.

(15) In Zone 313, disconnect electrical connector G28-A from the hydraulic selector valve G28.

Install a suitable shunt between the following terminals:

- G28-A Pin 'F' and selector valve receptacle Pin 'C'
- G28-A Pin 'D' and selector valve receptacle Pin 'A'

(16) Disconnect Yellow hydraulic flexible pipe Part No. E7500004334 to tail landing gear actuator at the bulkhead connector on FR 88.

(17) Install blanks Part No. AN929-4C and AN806-4 to the disconnected pipe assembly and the bulkhead connector respectively (Ref. 20-23-11). Torque load the blanks (Ref. 20-23-12) and secure the disconnected pipe assembly to the tail landing gear actuator (Ref. 20-23-14).

(18) Remove safety clips and tags and reset the circuit breakers previously tripped.

D. Operation

WARNING: MAKE CERTAIN THAT THE AREA AROUND THE TAIL LANDING GEAR IS CLEAR TO ENABLE THE TAIL GEAR TO RETRACT SAFELY.

(1) Ensure the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(2) Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

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(3) Pressurize Green hydraulic system using the ground pressurizing electric pump (Ref. 29-11-00, Servicing).

WARNING: DO NOT SELECT LANDING GEAR "UP" AS THIS COULD CAUSE THE LANDING GEAR TO RETRACT.

NOTE: Do not operate the ground pressurizing pump for longer than fifteen minutes. Allow a time period of thirty minutes between operations to allow the pump to cool down.

(4) Select "DOWN" on the Normal landing gear selector. The tail landing gear will now retract.

(5) Check that the tail landing gear retracts and locks up. On the landing gear position indicating unit at the First Officer's instrument panel, the green T arrow will go out and the red light, at the tail gear position above the green T arrow, comes on as the tail gear is retracting. When the tail gear is retracted and locked-up, the red light will go out (Ref. Description and Operation, Figure 018).

WARNING: MAKE CERTAIN THAT THE NOSE AND MAIN LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(6) Shut the nose and main landing gear doors by operating the handle on the LH main landing gear leg and on the nose landing gear leg.

(7) Shut down and depressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect the electrical ground power unit (Ref. 24-41-00, Servicing).

(9) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

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(10) In Zone 313, gain access to hydraulic selector valve G28 through access panel 313AB.

Remove the electrical shunts that were previously installed at connector G28-A of the hydraulic selector valve G28:

- G28-A Pin 'F' and selector valve receptacle Pin 'C'
- G28-A Pin 'D' and selector valve receptacle Pin 'A'

(11) Install a protective cap to hydraulic selector valve G28 electrical receptacle.

(12) Install a protective cap to the free plug connector G28-A.

<u>WARNING</u>: MAKE SURE YOU DO NOT FOUL THE OPERATION OF ANY SYSTEM IN THE TAILCONE AREA WHEN INSTALLING THE TY-WRAPS.

(13) Secure the free plug connector and wiring to the adjacent structure using suitable Ty-Wraps.

(14) Remove safety clips and tags and reset the circuit breakers previously tripped.

E. Close-Up

(1) Install access panel 313AB.

(2) Remove the warning notice from the flight compartment.

(3) Make an entry in the aircraft Acceptable Deferred Defect Log, to advise that the tail gear is electrically disabled in the locked up position.

13. Procedure to Re-Instate Normal Operation of the Tail Landing Gear after Retraction/Isolation

A. General

This procedure is to allow re-instatement of the tail landing gear operation, after it has been retracted and isolated, whenever this has been done for operational reasons.

Compliance with this procedure ensures that the tail gear will extend normally after it has been retracted and isolated by the procedure to retract and isolate the tail landing gear given in Servicing.

B. Equipment and Materials

DESCRIPTION	PART NO.
Access platform 12 ft 6 in (3.85 m)	-
Electrical ground power unit	-
Circuit breaker safety clips	-

C. Prepare

(1) Take the precautions described on Page 401.

(2) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) On First Officer's instrument panel, verify that the landing gear Normal control lever is in the NEUTRAL position.

(4) On the centre console, verify that the landing gear Standby Lowering control lever is in the NEUTRAL position.

(5) Ensure Yellow hydraulic system is not pressurized.

(6) Make certain that the visor is NOT locked up, and that the visor control agrees with the visor position.

(7) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(8) Display a warning notice in the flight compartment prohibiting the operation of the landing gear operating lever.

(9) Remove access panel 313AB from the tailcone and gain access to the hydraulic selector valve G28.

(10) In Zone 313, remove and discard the medium used to secure the cable of hydraulic selector valve G28 in the stowed position. Remove blanks and refit the electrical connector G28-A to the hydraulic selector valve G28.

(11) Remove the medium used to secure the pipe assembly Part No. E7500004334 to the actuator.

(12) Remove blanks from pipe assembly and bulkhead connector. Reconnect the flexible pipe assembly Part No. E7500004334 to the bulkhead connector. Torque load pipe connections (Ref. 20-23-12).

(13) Remove the safety clips and tags and reset the circuit breakers previously tripped.

D. Operation

WARNING: MAKE CERTAIN THAT THE AREA AROUND THE TAIL LANDING GEAR IS CLEAR TO ENABLE THE TAIL GEAR TO EXTEND SAFELY.

(1) Connect the electrical ground power unit, and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Pressurize the Green hydraulic system using the ground pressurizing electric pump (Ref. 29-11-00, Servicing).

NOTE: Do not operate the ground pressurizing pump for longer than fifteen minutes. Allow a time period of thirty minutes between operations to allow the pump to cool down.

(3) Open the main and nose landing gear doors (Ref. Servicing).

NOTE: The tail landing gear unit will now extend.

(4) Check that the tail landing gear extends and downlocks. On the landing gear position indicating unit at the First Officer's instrument panel, the red light at the tail gear position above the green T arrow, comes on as the tail gear is extending. When the tail gear is down and locked the green T arrow comes on (Ref. Description and Operation, Figure 018).

(5) On the First Officer's instrument panel, place the landing gear NORMAL control lever in the NEUTRAL position.

(6) Operate the nose and main landing gear doors to the "CLOSED" position (Ref. Servicing).

(7) Shut down and depressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect the electrical ground power unit (Ref. 24-41-00, Servicing).

E. Close-Up

(1) Install access panel 313AB.

(2) Remove the warning notice from the flight compartment.

(3) Cancel the entry in the aircraft Acceptable Deferred Defect Log advising that the tail gear is electrically disabled in the locked up position. Advise the flight crew that the tail gear is now operational.

END OF THIS SECTION

NEXT

MAIN GEAR AND DOORS - DESCRIPTION AND OPERATION

RB 1. General (Ref. Fig. 001)

Each main gear is installed in the wing spar box.
The gear hinges on a cross beam which includes trunnions at each end swinging in spherical bearings attached to the structure at RIB21 and RIB22. A hydraulic actuating cylinder provides for extension and retraction of the gear.
The main gears retract inboard into the fuselage where they are held in the up position by an uplock box attached to the wing spar box upper section.
A shock absorber shortening lock system operating in conjunction with the retraction system enables main gear to retract into the landing gear bay. Lateral bracing of the gear in downlocked position is provided by a telescopic brace strut.
Each main gear is equipped with two doors.

RB 2. Description (Ref. Fig. 001)

A. Main Gears

Each main gear includes

(1) A gear leg consisting of :

(a) A cross beam

(b) A leg

(c) A drag strut transmitting fore-and-aft loads

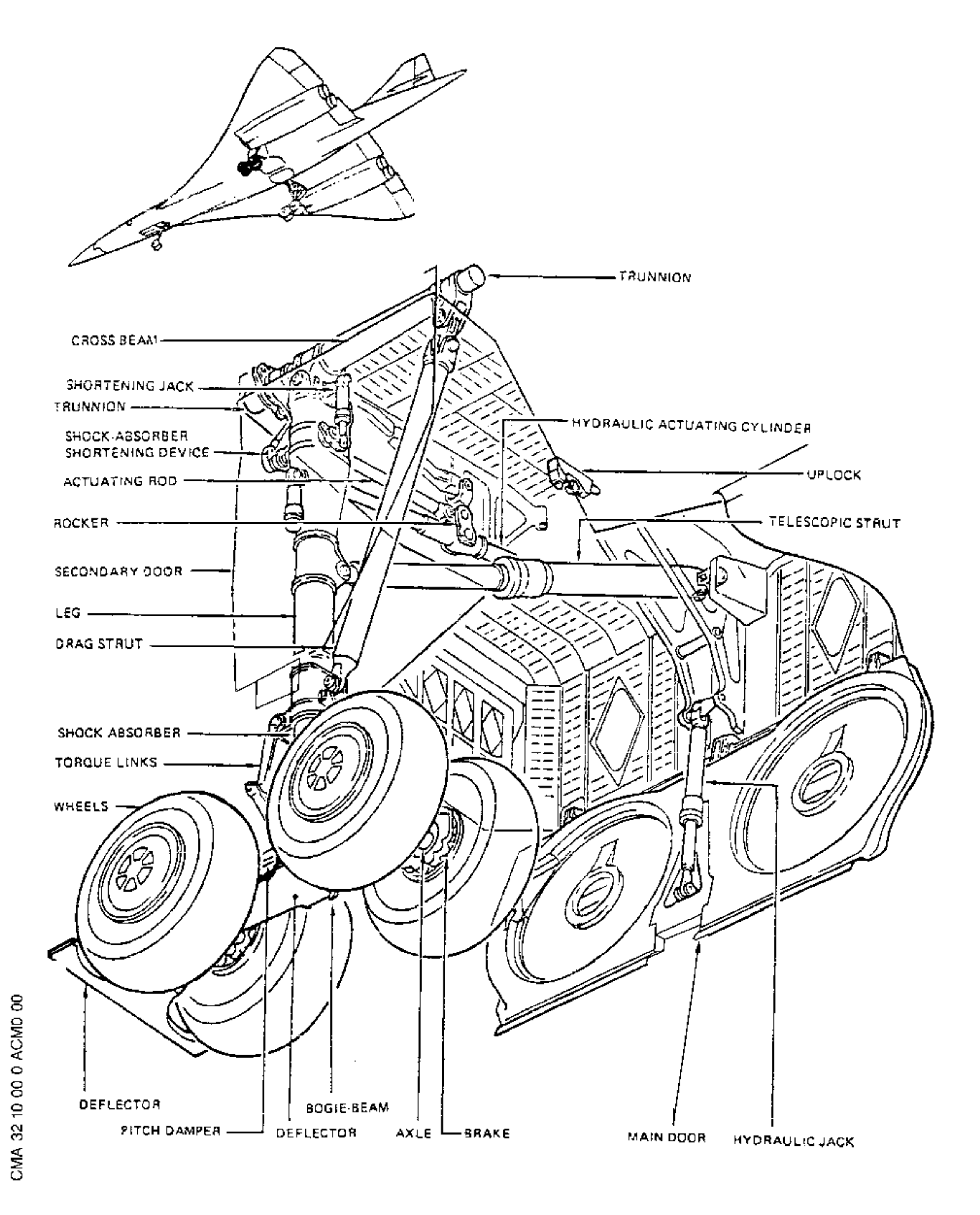
(d) An oleo-pneumatic shock absorber connected to the leg by torque links

(e) A shortening system whereby the shock absorber is retracted into the gear leg during gear retraction. The shock absorber remains expanded. Shock absorber retraction is achieved automatically at initiation of gear retraction by a mechanical system with the assistance of a hydraulic shortening jack.

(f) A bogie beam attached by a hinge pin to the bottom of the shock absorber sliding tube.

(g) Two pitch dampers absorbing oscillations imparted during aircraft ground roll.

(2) A telescopic brace strut which transmits lateral loads



Main Gear and Doors
Figure 001

to the aircraft structure. This strut is mechanically downlocked. Downlock release is hydraulic.

(3) A retraction system including a hydraulic cylinder connected by a universal joint to a bellcrank and to a mechanical actuating rod.

(4) The bogie beam is fitted with four wheels. Each wheel which includes hydraulic disc brakes is installed on an axle incorporated in the bogie beam.

R (5) Two deflectors, one installed in front of the wheels,
R the other installed under the bogie beam, prevent
R ingestion of water into the engines during ground roll
R on a wet runway.

B. Doors

(1) There are two doors :

(a) A main door which only opens during gear operating phases and which is actuated by a hydraulic jack.

(b) A secondary door which is mechanically linked to gear operation.

(2) In gear uplocked position the doors are uplocked thus restoring fuselage-wing aerodynamic contour.

MAIN GEAR AND DOORS - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Visual check of components located in main landing gear bay for correct condition and leakage.

B. Visual check of main landing gear.

2. Main Gear and Doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
Access Platform 4.44 m (14 ft. 7 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : CHECK THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position and prohibit its operation by displaying a warning notice in flight compartment.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Install safety collars on door actuating jacks.

C. Check

(1) General checks

(a) Check that all lubricators are clean and in correct condition.

(b) On all attaching hardware and hinging parts check that :

- nuts and bolts are tight.
- locking devices (cotter pins, locking plates, lockwire...) are correctly installed.
- pins, nuts, bolts, washers are in correct condition (evidence of oxidation).

(c) Check that bonding braids are in correct condition.

(2) Uplocks

(a) Check hooks for evidence of damage in uplock roller impact area.

(b) Check for hydraulic fluid leakage especially at hydraulic line unions.

(c) Check that emergency uplock release controls are in correct condition.

(d) On landing gear uplocks, check that dampers are extended : 12 mm approx. (0.472 in.).

(3) Landing gear actuating cylinders, door actuating jacks and telescopic brace struts :

(a) Check for score marks, pitting, oxidation and flaking of chrome plating on rods especially in zone where chrome plating ends.

(b) Check that lock nuts of adjustable end fittings are correctly tightened and safetied.

(c) Check for evidence of hydraulic fluid leakage on chrome plated rods and at line unions.

(d) Check for deformation or crack initiation particulary on moving parts and attaching hardware.

(4) Landing gear legs

(a) At the top of shock absorbers check for evidence of hydraulic fluid leakage.

(b) Check for score marks, pitting, oxidation and flaking of chrome plating on main shock absorber, pitch damper rods and braking system sliding lines. In particular check zones where chrome plating ends.

(c) Check that pitch dampers are in correct condition.

(d) Check that charging valve protectors and caps are correctly installed.

(e) Check that landing gear uplock roller rotates freely and bears no trace of impact.

(5) Landing gear doors

(a) Check for deformation at hinge fittings and uplock roller.

(b) Check that uplock roller rotates freely and bears

no trace of impact.

R (c) Check the uplock roller assembly for security
R and correct wire locking of nut to serrated
R tab washer (Ref. Fig. 601).

(d) Check that door hinges are in correct condition and correctly safetied.

(6) Hoses.

(a) Check that attachment clips are in good condition and correctly tightened and that hoses bear no trace of wear.

(b) Check that hoses do not foul one another or structure or other components.

(c) Check for freedom of movement by moving centre of hose.

(d) Check unions for evidence of hydraulic fluid leakage and efficient safetying.

(7) Hydraulic lines.

(a) Check for deformation, crack initiation and evidence of impact, particularly at elbow fittings and component connections.

(b) Check that attachment clips are in good condition and correctly tightened.

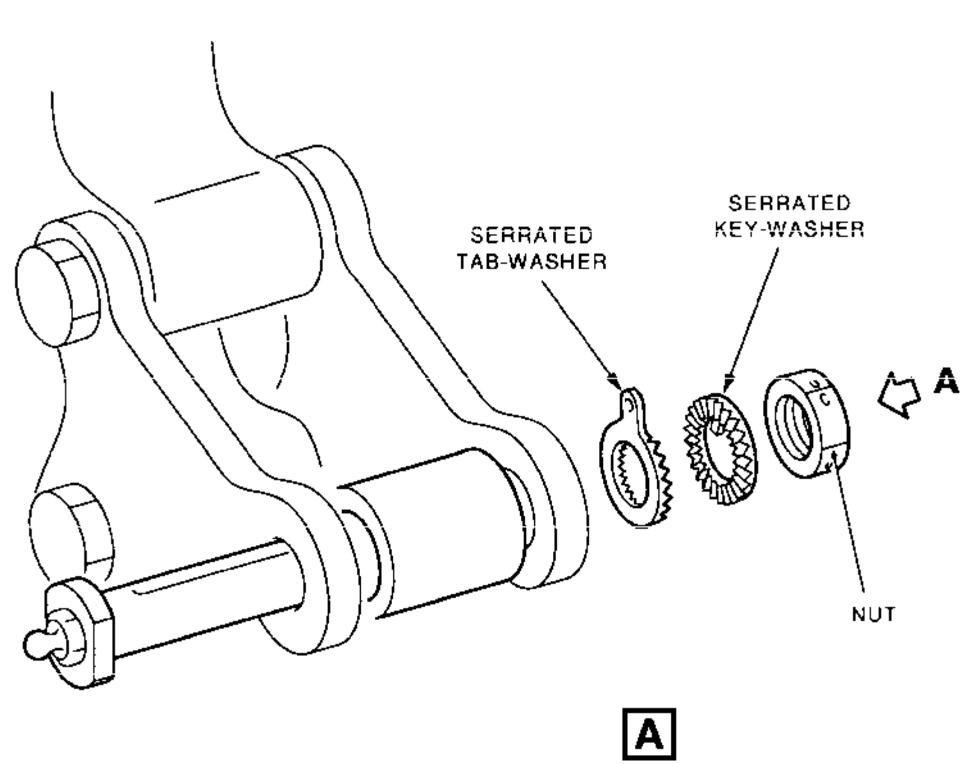
(c) Check for evidence of hydraulic fluid leakage at line connections.

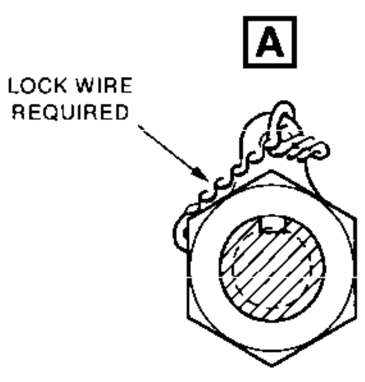
(8) Hydraulic components.

(a) Check fasteners for correct condition (efficient safetying).

(b) Check for hydraulic fluid leakage at line-to-component connections.

(c) Check general condition of controls of mechanically controlled components.





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Roller Instl - Main Gear Door Uplock
Figure 601

(9) Electrical wiring.

(a) Check that electrical connectors are correctly connected and safetied.

(b) Check that wires are in good condition and correctly attached.

D. Close-Up

(1) Remove safety sleeves and collars.

(2) Remove access platform.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: CHECK THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(5) Close landing gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(9) Remove warning notice from flight compartment.

MAIN GEAR - DESCRIPTION AND OPERATION

1. General

R Each main gear is hinged to the wing on the crossbeam integral
R trunnions pivoting in two structural-mounted bearings at RIB21A.
R The gear leg and drag strut are attached to the crossbeam. The
landing gear is operated by a hydraulic actuating cylinder. A
shock absorber shortening system operating in conjunction with
the gear retraction mechanism enables the gear to be simul-
R taneously shortened and retracted into the gear bay. A bogie
beam hinging on the bottom end of the shock absorber sliding
tube includes the two wheel/brake assembly axles.
During retraction, two pitch dampers maintain the bogie beam
perpendicular to the gear leg.
Four brake torque arms absorb brake torque.

2. Main Landing Gear (Ref. Fig. 001)

Each main gear comprises the following :

A. Crossbeam

The crossbeam is tubular in section and includes at each end the landing gear trunnions which pivot in two structural mounted spherical bearings. The trunnions can be driven inside the crossbeam to facilitate gear removal or installation.

B. Leg

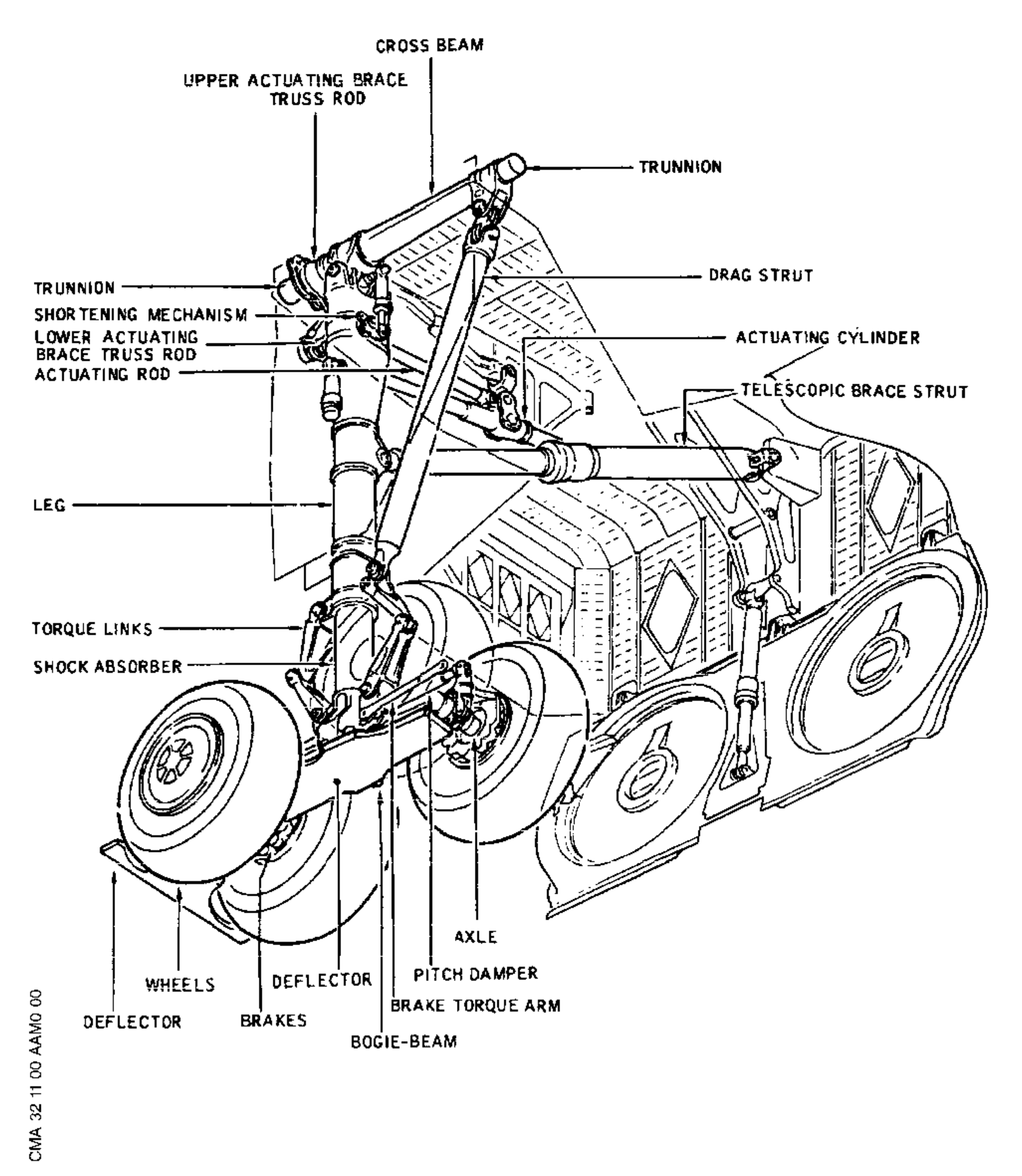
The leg is connected to the crossbeam. The sliding tube
R comprising the main shock absorber and the internal shor-
R tening link mechanism are installed in the leg bore.
The leg top section is connected to two gear actuating bra-
ce truss rods whose fulcrum forms the actuating rod attach
point.
R The upper actuating brace truss rod is connected to the
crossbeam, while the lower rod is connected to the hydraulic
actuating cylinder attach point.

C. Drag Strut

The drag strut is connected to both the crossbeam and to the leg. It braces the crossbeam and the leg.

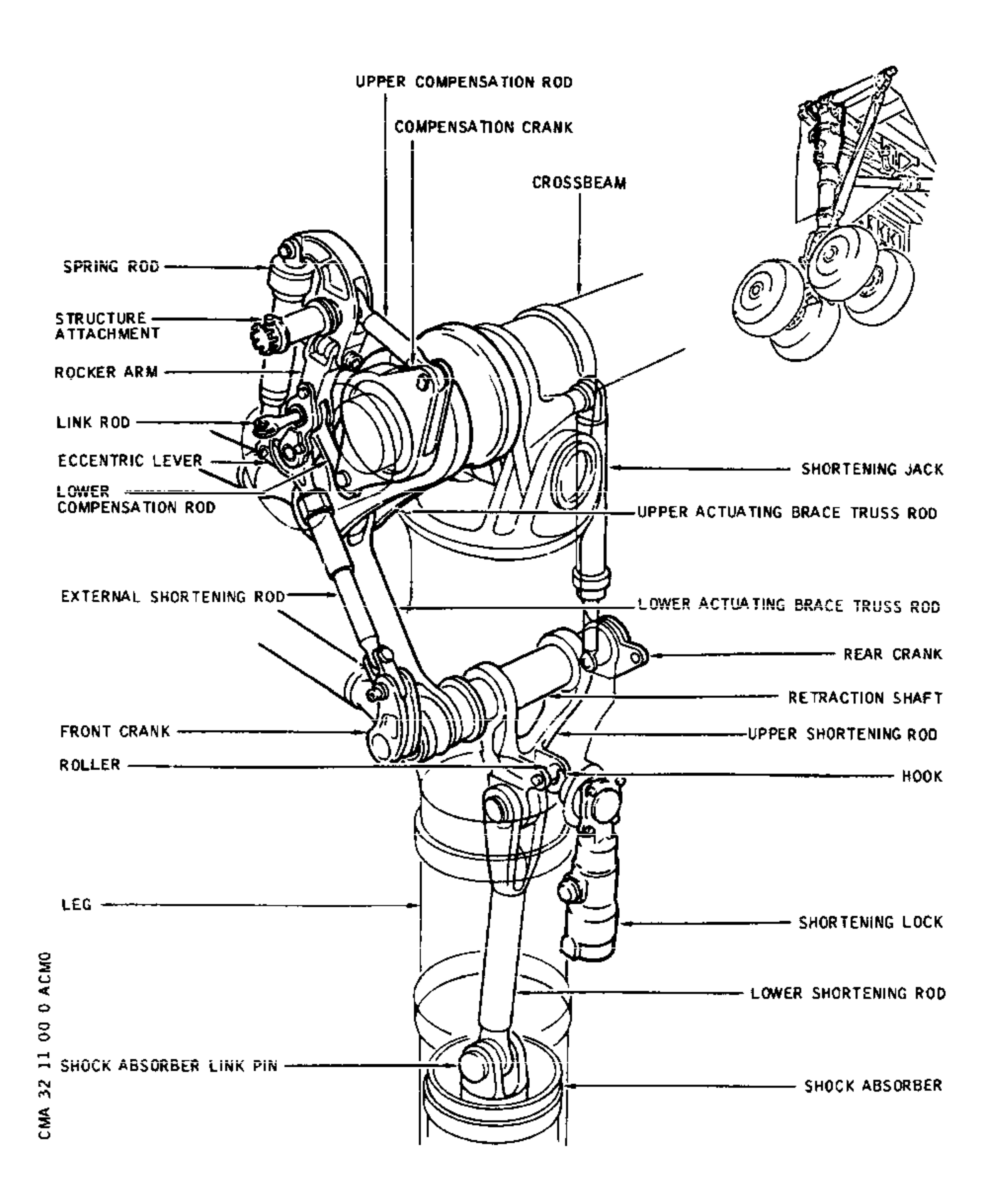
D. Shortening System (Ref. Fig. 002)

With the main gear shock absorber extended, a shortening system has proved necessary due to limited space available



R

Main Landing Gear
Figure 001



External and Internal Shortening Linkage
Figure 002

R

in the landing gear bay. The shock absorber retracts into the leg bore during gear retraction.

(1) Description

The shortening system comprises :

(a) An internal shortening system in the leg upper ovoid section which is connected to the shock absorber upper section, comprising :

- a retraction shaft with two control cranks. The front crank is actuated through the outer shortening rod.
  The rear crank transmits motion from the shock
R absorber shortening jack.
- an upper shortening rod installed on the retraction shaft.
  The shortening rod includes a roller engaging with the shortening linkage lock hook.
- a lower shortening rod connecting the upper shortening rod to the shock absorber fork fitting.

(b) An external shortening system which includes :

- An external shortening rod connected to the retraction shaft front crank. The upper end of this rod is connected to an eccentric lever forming part of the compensation system.
- A compensation system comprising a compensation crank which can move on the crossbeam, as well as a rocker arm.
  One end of the rocker arm is connected to the compensation crank by two rods while the other end is connected to a fixed point on the aircraft structure, adjustment is made through an eccentric.
- A spring rod loaded against the aircraft structural connecting point and acting on the eccentric lever connected to the bottom of the rocker arm. With gear downlocked this spring rod tends to align the two internal shortening rods.
R - A link rod absorbing fore-and-aft loads connects the rocker arm to the aircraft structure.

(c) A shortening jack attached at one end to a member
R installed on the barrel-crossbeam connecting shaft and at the other end to the retraction shaft rear crank.

(d) A shortening lock serves to lock the internal shortening system with landing gear extended. Locking is mechanical and automatic. Lock release is hydraulic.

(2) Operation

(a) Shortening mechanism operation during gear uplock sequence.
During retraction, the shortening lock is hydraulically released. The hook swivels and disengages the upper shortening rod roller, at same time moving the roller forward so as to throw the two rods out of alignment and thus achieve lock relea-
R se. Simultaneously, upon initiation of retraction, the shortening jack transmits a torque load to the jack retraction shaft rear control crank. As the main gear leg travels up along an arc of a circle, causing the external shortening rod attached to the bottom of the rocker arm to move, that rod provides a support point for the retraction shaft forward crank. As it rotates, the upper shortening rod causes the lower rod to move up together with the shock absorber. This initial sequence is referred to as "overretraction", that is the maximum retraction travel limit that the shock absorber can achieve. This sequence occurs at an angular gear leg displacement of 76° approximately corresponding to the point where the tyres just clear the main gear door in open position. When this angle has been passed, the operating mechanism moves in the opposite direction and the shock absorber extends by 15 mm.
When the main gear is uplocked, the shortening mechanism is in shortened configuration.

(b) Shortening mechanism operation during gear downlock sequence

During the initial phase the shock absorber moves up to overretraction configuration corresponding to the point where tyres just clear the main doors. Shortening mechanism operation is then reversed while the shortening jack extends.
The internal rods move to in-line position. The upper shortening rod roller engages with the shortening jack lock-hook. The hook swivels and locks thus the internal shortening system mechanism is locked.
The external shortening rod is tensioned through the spring rod.

(c) Compensation system

The system is designed to absorb deformation within the elastic limit of the landing gear structure, so as to protect the external shortening rod against the effect of loads imparted during landing. Since the compensation crank is connected to a fixed point on the aircraft structure through the upper compensation rod, whenever shocks are transmitted during aircraft touch-down, deformation of the crossbeam causes the crank to slightly rotate, the upper attach point of the external shortening rod is so displaced that the traction load on that rod is reduced. Traction load on the spring rod is reduced at the same time.

E. Main Shock Absorber (Ref. Fig. 003)

The main gear shock absorber is designed to meet the following requirements consistent with operation :

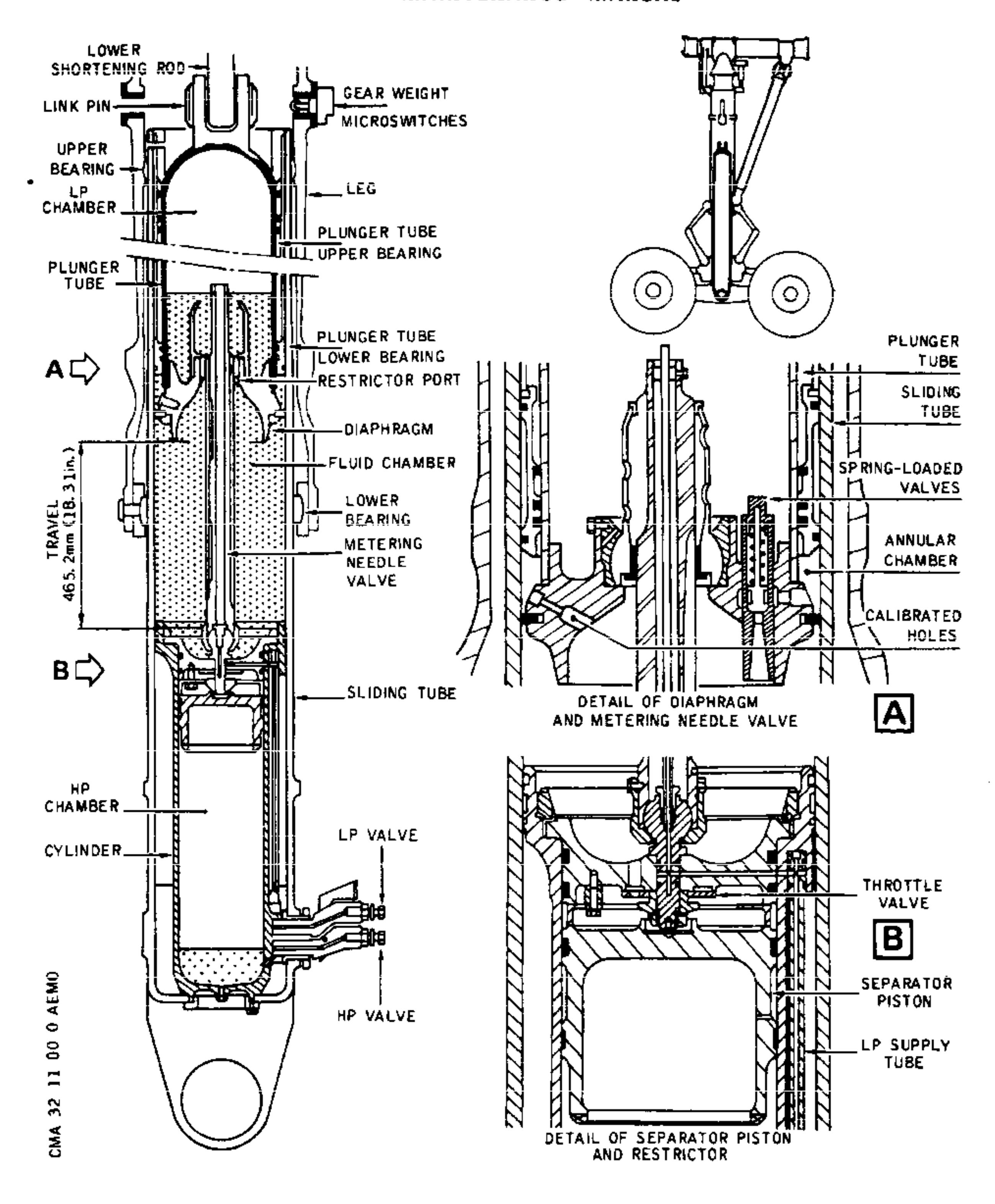
A static load range, providing a high degree of flexibility without appreciable changes in aircraft longitudinal attitude during ground roll.
Top speed limit landing conducive to build-up of considerable energy which must be absorbed without development of dynamic loads which could result in stretching (permanent deformation) of landing gear or aircraft structure.
Ground roll turns which the shock absorber must withstand without bottoming.

(1) Description

R The main shock absorber has a total stroke of 465.2 mm
R (18.31 in.) and is of the two stage type with separator
R piston. It mainly includes :

R (a) A plunger tube attached to the shortening system
R lower rod by a pin. Access to this pin is gained
R through two holes provided in the gear leg. The
R two gear weight microswitches are mounted in one
R of these holes. The plunger tube is guided in the
R sliding tube by an upper and lower bearing.

R (b) A sliding tube guided in the leg bore by an upper
R and lower spherical bearing. The lower part of the
R sliding tube houses a cylinder constituting the
R high pressure (H.P.) chamber. The upper part of
R the cylinder is equipped with a restrictor and
R H.P. throttle valve.
R A separator piston, constituting the bottom of the



Main Shock Absorber
Figure 003

R

fluid chamber slides in the cylinder. A ball mounted metering needle valve assembly, integral with the sliding tube, slides through the centre of the plunger tube diagraphm. The lower part of the sliding tube is equipped with two filling/charging valves. The upper valve (blue) is connected through the needle valve assembly to the plunger tube (L.P. chamber). The lower valve (red) is connected to the cylinder housed in the sliding tube (H.P. chamber).

(c) A system restricting fluid flow operating by means of a fixed diaphragm combined with metering of fluid through the restrictor valve.

The diaphragm provides communication between the fluid chamber and the variable volume annular chamber, as well as between the plunger tube and the sliding tube through three calibrated holes and three spring-loaded valves.
The restrictor valve (needle valve) incorporates three tapered slots and ports fluid from the bottom to the top chamber.
The slots are so tapered that the fluid flow gradually increases as the sliding tube moves on its downward stroke.

(2) Operation

(a) Compression and shock absorption

The shock produced during landing results in downward movement (compression) of the sliding tube and of the restrictor valve with respect to the shock absorber stationary section, the plunger tube and the diaphragm. The volume of the fluid chamber is thus reduced. The fluid is expelled into the L.P. chamber (plunger tube) through the tapered slots in the restrictor (needle) valve.

The nitrogen is compressed with subsequent rise in pressure.
Some of the fluid is forced through the calibrated holes and the spring-loaded valves open as a result of the increase in pressure in the fluid chamber. This same pressure acts on the separator piston which tends to compress the H.P. chamber. With the increase in fluid in the L.P. chamber the volume of nitrogen decreases and the pressure increases. The kinetic energy is thereby absorbed and transformed into heat either through apprecia-

ble throttling of the fluid during fluid transfer or through an increase in pressure of the nitrogen in the L.P. and H.P. chambers.

(b) Expansion

When the energy, built up by compression of the L.P. and H.P. chambers, balances the load on the shock absorber, the nitrogen starts to expand. The compressed nitrogen in the H.P. chamber acts on the separator piston to expell the hydraulic fluid through the throttle valve. The compressed nitrogen in the L.P. chamber (plunger tube) expells the hydraulic fluid into the fluid chamber (sliding tube).
The sliding tube is moved back with respect to the plunger tube. Expansion is slowed down by throttling of the fluid through the diaphragm/restrictor (needle) valve and by closure of the spring-loaded valves. Balance is restored between the shock absorber load and resulting pressure of the nitrogen in the L.P. and H.P. chambers upon completion of expansion. Sliding tube displacement is function of the load.

F. Pitch Dampers

(1) General

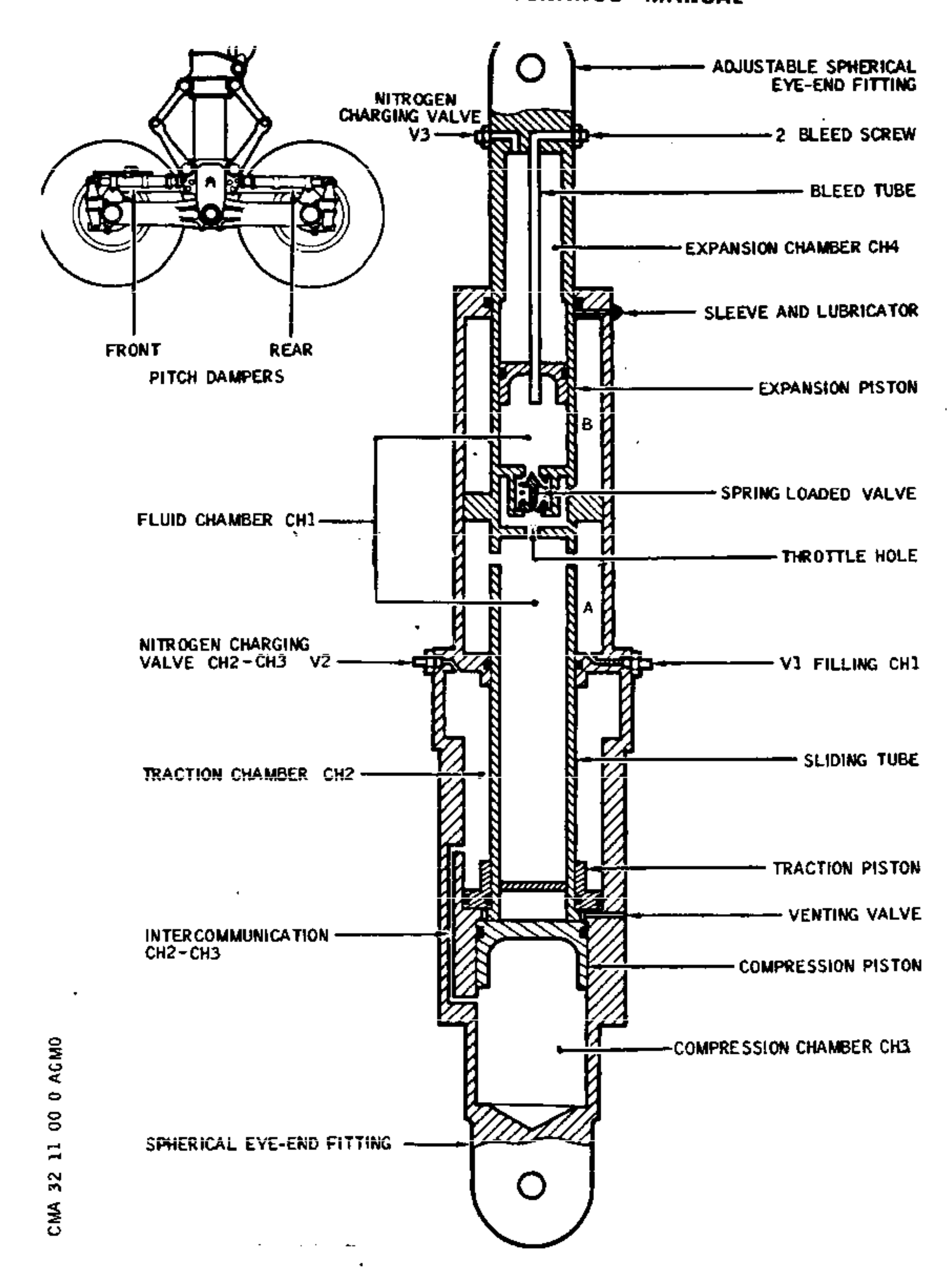
There are two pitch dampers on each main gear. The dampers serve to absorb oscillations due to ground surface irregularities during ground roll. They ensure that the bogie beam is maintained perpendicular to the gear leg during gear retraction.

The pitch dampers may be of two types (type I and type II) and can be differenciated as follows :
- by means of an identification plate affixed on the pitch damper.
- type I pitch damper is equipped with a bleed screw at the end of the sliding tube.

(2) Description of type I pitch damper
(Ref. Fig. 004)

(a) The pitch damper includes :

- a body incorporating a spherical eye-end fitting and a bearing sleeve provided with a lubricator.
- a sliding tube incorporating an adjustable spherical eye-end fitting.



R Type I Pitch Damper
Figure 004

- Three pistons.

(b) The body centre wall and the sliding tube delimit the two chambers, one of which contains the nitrogen and the other the hydraulic fluid.

(c) The nitrogen chamber is divided into two parts connected by a drilled hole

- Traction chamber CH2 with associated piston
- Compression chamber CH3 with associated piston
- The space between these two pistons is vented by a valve

(d) The sliding tube includes an integral collar providing a mobile partition which divides fluid chamber CH1 into two parts connected by a centre restrictor hole.

(e) The sliding tube contains :

- An expansion piston delimiting nitrogen expansion chamber CH4 and the fluid chamber.
- A bleed tube and associated bleed screw used during filling and topping-up of fluid chamber CH1
- A spring-loaded valve with the spring tending to maintain the valve in open position.

(f) A damper fitted with three valves

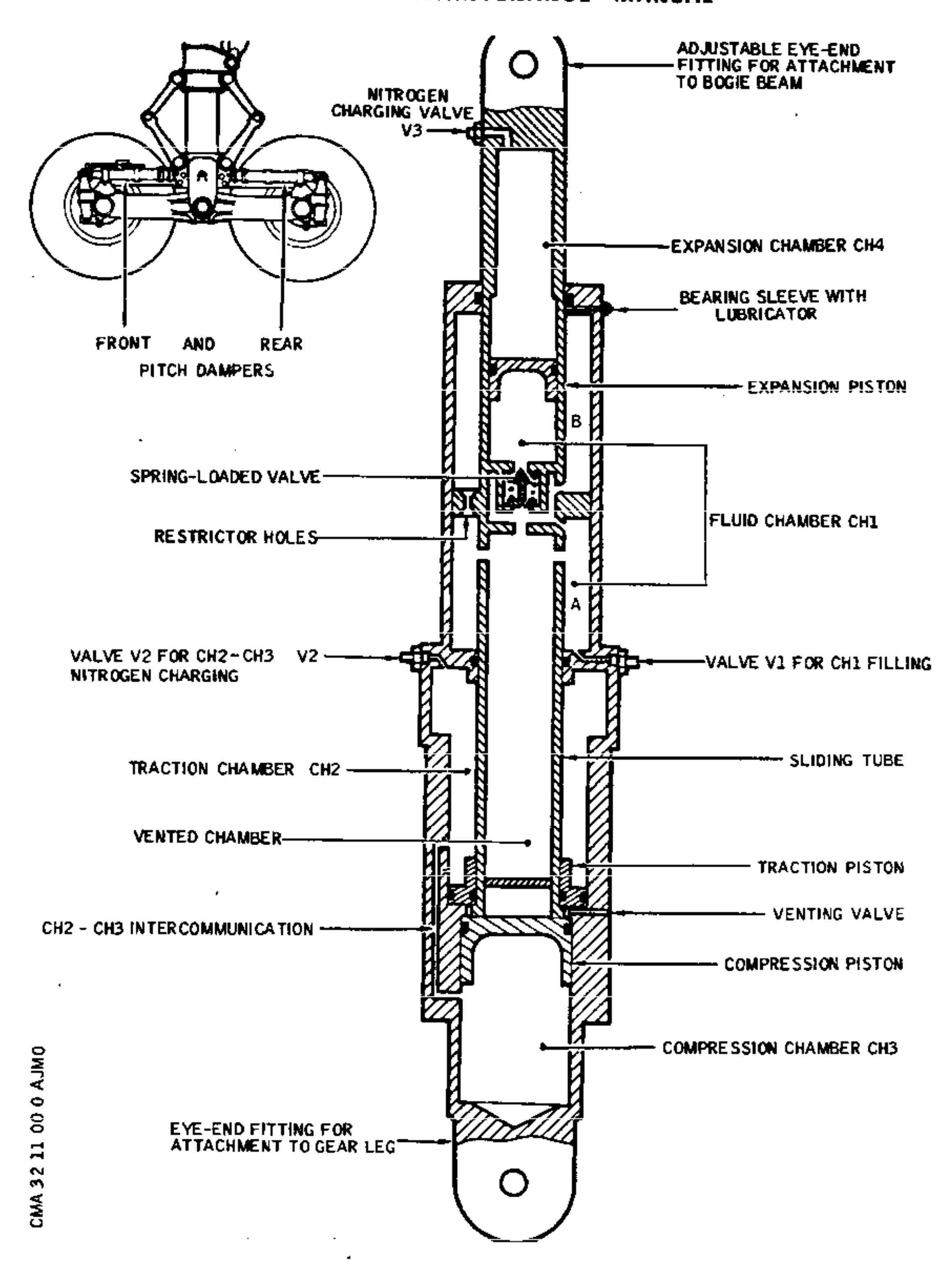
- Valve V1 for topping-up of fluid chamber CH1.
- Valve V2 for charging of intercommunicating chambers CH2 and CH3.
- Valve V3 for charging of expansion chamber CH4.

(g) The front pitch damper includes a microswitch known as the "bogie beam aligned" microswitch ; this microswitch serves to prevent gear retraction so long as the bogie beam is not perpendicular to the gear leg.

R (3) Description of type II pitch damper
R (Ref. Fig. 005)

(a) The pitch damper includes :

- A body incorporating a spherical eye-end fitting and a bearing sleeve provided with a lubricator
- A sliding tube incorporating an adjustable spherical eye-end fitting.



R Type II Pitch Damper
Figure 005

- Three pistons

(b) The body centre wall and the sliding tube delimit the two chambers, one of which contains the nitrogen and the other the hydraulic fluid.

(c) The nitrogen chamber is divided into two parts connected by a drilled hole :

- Compression chamber CH3 with associated piston
- Traction chamber CH2 with associated piston
- The space between these two pistons is vented by a valve and is connected to sliding tube.

(d) The sliding tube includes an integral collar providing a mobile partition which divides fluid chamber CH1 into two parts. Three restrictor holes allow communication between these two parts.

(e) The sliding tube contains :

- An expension piston delimiting nitrogen expansion chamber CH4 and the fluid chamber.
- A spring-loaded valve with the spring tending to maintain the valve in open position.

(f) The damper is fitted with three valves :

- Valve V1 for topping-up of fluid chamber CH1
- Valve V2 for charging of intercommunicating chambers CH2 and CH3.
- Valve V3 for charging of expansion chamber CH4.

(g) The front pitch damper includes a microswitch known as the "bogie beam aligned" microswitch. This microswitch serves to prevent gear retraction as long as the bogie beam is not perpendicular to the gear leg.

R (4) Operation

(a) Balanced Position

The bogie beam is maintained perpendicular to the gear leg by the combined action of the two pitch dampers up to the time that the aircraft wheels touch the ground.
The nitrogen pressure in intercommunicating chambers CH2 and CH3 displaces the pistons towards each other thus maintaining the sliding tube in a balanced position.

(b) Simultaneous Actuation of Both Pitch Dampers

As soon as the aircraft in nose-up attitude touches down (with aft wheels), the bogie beam swings accordingly

- The rear damper compresses
- The front damper extends under traction load.

Both these forces combine to stop the swinging movement.
During aircraft ground roll, the pitch dampers move in the same way but the oscillations are much less pronounced.

(c) Compression

Upward movement of the sliding tube causes the compression piston to move while the traction piston remains on stops.
The total volume of the two intercommunicating chambers CH2 and CH3 decreases as nitrogen pressure increases.
Simultaneously transfer of fluid occurs from chamber A to chamber B through the sliding tube throttling holes. If the rate of compression is high (touchdown impact), the throttled fluid absorbs most of the kinetic energy, while the remaining energy is absorbed by the compression of the nitrogen. The kinetic energy is thus changed into heat.

(d) Extension under Traction Load

The sliding tube draws the traction piston while the compression piston remains on stops.
The effects are the same as those produced during compression, that is, compression of the nitrogen and throttling during fluid transfer.
Transfer is then reversed from chamber B to chamber A.

(e) Purpose of the Expansion Chamber and Valve

A temperature increase of the total volume of fluid contained in pitch damper fluid chamber results in expansion of the fluid which must be absorbed. The expansion of the fluid causes the expansion piston to move and compress the nitrogen in the expansion chamber.
The valve opened under spring action provides a

calibrated restrictor hole. Whenever rapid displacement of the sliding tube occurs (touchdown impact), the spring-loaded valve closes under the action of differential pressure. The expansion piston thus remains stationary and the expansion chamber plays no part in absorption of energy. As soon as the sliding tube ceases to move, since the pressures upstream and downstream of the valve are balanced, the valve opens under spring action and fluid can then expand in the expansion chamber.

G. Torque Links

The torque links are connected by the upper arm to the bottom end of the leg and by the lower arm to the bottom end of the shock absorber. The torque links re-transmit the torques with vertical moments resulting from uneven stresses produced on the wheels or due to swivelling. These stresses are retransmitted onto the gear leg and crossbeam.

H. Bogie Beam

The bogie beam is attached to the bottom end of the shock absorber and includes a hole at each end which takes the wheel axle for each pair of wheels. The forward and aft ends of the beam include fork fittings for installation of the pitch dampers.

R **After SB 32-079-01 For A/C 001-007.

R The front and rear parts of the bogie beam are equipped with
R two strain gauge bridges: one normal, one emergency.
R These bridges are used for the flat tyre detection system
R (Ref. 32-48-00, Description and Operation).

I. Brake Torque Arms

There are four identical brake torque arms. One end of the arms is connected to the sliding tube and the other to the brake torque plates. They transmit brake torque to the sliding tube and to the total leg structure.

R One strain gauge bridge is installed on each brake torque
R arm. These bridges are used for the measurement of torque at
R each brake unit (Ref. 32-43-00, Description and Operation).

J. Deflectors

(1) A deflector is installed in front of the wheels (front deflector) on each landing gear. It prevents water from being ingested into the engines during ground roll on a wet runway.
The deflector hinges at the pitch damper front attach point and is held by a spherical joint bearing on the bogie beam towing fitting.

(2) A second deflector, installed under the bogie beam (centre deflector), also prevents water from being ingested into the engines and protects hydraulic installations.
The deflector is clamped to the bogie beam.

K. Swivel Fittings (Ref. Fig. 006A & 006B)

The swivel fittings are designed for providing a continuous flow in a hydraulic system, one part of which is subjected to torsional stresses.

The hinged arms have three swivel fittings, to enable the system to fold up in two parts.

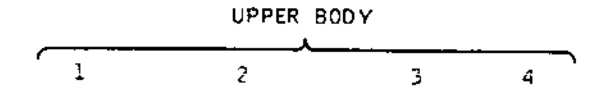
There are four swivel fittings mounted on the crossbeam.

(1) Two swivel fittings supply the braking system, one for the normal braking system, the other for the emergency system.

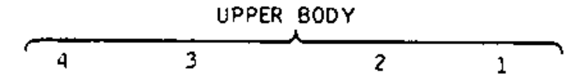
(2) The third swivel fitting supplies the shortening cylinder system.

(3) The fourth swivel fitting supplies the shortening lock system.

For the Hydraulic Connections See Table 1.



SWIVEL FITTINGS
HYDRAULIC LOCATION AND CONNECTIONS
LEFT-HAND INSTALLATION
FIGURE 006A



SWIVEL FITTINGS
HYDRAULIC LOCATION AND CONNECTIONS
RIGHT-HAND INSTALLATION
FIGURE 006B

SYSTEM	BODY	HYDRAULIC CONNECTIONS	
		INDEX	FUNCTIONS
NORMAL BRAKE	1 (UPPER)	A B	NORMAL SUPPLY RESERVOIR RETURN LINE
	5 (LOWER)	C D	SUPPLY RESERVOIR RETURN LINE
EMERGENCY BRAKE	2 (UPPER)	A B	EMERGENCY SUPPLY RESERVOIR RETURN LINE
	6 (LOWER)	C D	EMERGENCY SUPPLY BLANKED OFF
SHORTENING LOCK	3 (UPPER)	A B C	SUPPLY RESERVOIR RETURN LINE SERVICE
	7 (LOWER)	D E F	SUPPLY RESERVOIR RETURN LINE SERVICE
SHORTENING CYLINDER	4 (UPPER)	A B C	NORMAL EXTENSION SHORTENING EMERGENCY EXTENSION
	8 (LOWER)	D E F	NORMAL EXTENSION SHORTENING EMERGENCY EXTENSION

HYDRAULIC CONNECTIONS ON SWIVEL JOINTS
LEFT-HAND AND RIGHT-HAND INSTALLATIONS
TABLE 1 (See Figures 006A & 006B)

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MAIN GEAR - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

B Removal for landing gear leg replacement.
B Landing gear leg removal does not require complete disassembly
B of shortening jack and shortening rod. These items are
B disconnected on the landing gear leg side only and must be
B attached by slings to the structure to facilitate removal. The
B telescopic brace strut requires removal on a scheduled MLG
B change to facilitate NDT checks to certain of these components
B (Ref. 32-31-28, Removal/Installation) and the structural
B attachment fitting at Frame 57.

2. Main Landing Gear Leg

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack with Lifting Capability Greater than 81600 daN (183621 lbf) Spec M.F.P.	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adaptor, LH	D921485000

DESCRIPTION	PART NO.
- Balancing Device - Pyramid Adaptor, RH	D921485001
- Pyramid Adaptor - Lifting, LH	D924008000
- Pyramid Adaptor - Lifting, RH	D924008001
- Safety Stay	
- Ground Power Unit - Hydraulic, Power and Preliminary Testing	EMH398E
- Electrical Ground Power Unit	
- Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
- Access Platform 3.485 m (11 ft 5 in.)	
- Safety Barriers	
- AIR/HYDRAULIC Test Set	
- Beam Assy - Main Landing Gear Telescopic Strut	D930702000
- Trolley - Main Landing Gear - Ground Handling	D930704000
- Fixture - Bracing	257700/78
- Collar - Safety	257600/78
**ON A/C ALL	
B - Beam Assy - Main Landing Gear - Removal/Installation	D930700000 or 5-812740000
**ON A/C ALL	
- Bar - Securing	257800/78
- Sleeve - Wheel Axle	258200/78
- Wrench - Open End	151000/78
- Extractor	249800/78

DESCRIPTION	PART NO.
- Guide Assembly	249900/78
- Wrench - Claw	248100/78
- Fixture - Extraction and Positioning	248200/78
- Extractor	248300/78
- Guide Assembly	248400/78
- Fixture - Extraction and Positioning	248500/78
- Extractor	248600/78
- Olive - Assembly	248700/78
- Wrench - Open End	179500/78
- Extractor	256300/78
- Guide Assembly	256500/78
- Wrench - 12-Flat Socket	249400/78
- Extractor	249600/78
- Guide - Assembly	249700/78
**ON A/C ALL	
B - Wrench - Peg Open End B	179100/78 or 2-32-1513-1BA
B - Wrench - Open End B	256200/78 or 2-32-1511-1BA
**ON A/C ALL	
- Extractor	179300/78
- Guide Assembly	179400/78
- Torque Wrench 0 - 75 m.daN (0 - 550 lbf.ft.)	
- Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
- Blanking Plugs/Caps	
- Lockwire (Dia. 0.8 mm) (0.031 in.) (Corrosion Resistant Steel)	
- Grease (Ref. 20-30-00, No.051)	
- Grease (Ref. 20-30-00, No.058)	
- Grease (Ref. 20-30-00, No.059)	
- Varnish (Ref. 20-30-00, No.254)	
- Sealant (Ref. 20-30-00, No.352)	
**ON A/C ALL	
- Safety Sleeve - Nose Landing Gear doors	E925002000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in Neutral position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Install safety stay.

(6) Position safety barriers.

(7) Check that visor is not uplocked.

(8) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(9) Connect hydraulic ground power unit to Green hydraulic system.

(10) Remove landing gear and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

Adjust hydraulic power delivery to allow a slow retraction of gears.

(12) On First Officer's instrument panel, place landing gear Normal control lever in UP position and then return to NEUTRAL position as soon as the landing gear has retracted approximately 10 degrees.

(13) Position main landing gear to facilite removal of secondary door and maintain in this position.

(14) Remove locking cap and place nose and main gear door operating handles in open position (indicator plates showing red).

(15) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(17) Display warning notice in flight compartment.

(18) Install safety collars.

(19) Not applicable.

(20) Not applicable.

(21) Remove panel 572AT or 672AT.

(22) Remove doors 572BB then 572AB or 672BB then 672AB.

(23) Remove secondary door (4) (Ref. 32-12-12, Removal/ Installation).

(24) Remove door tension assemblies at leg.

(25) Remove safety clips and tags and reset circuit breakers.

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(26) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(27) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(28) With gear downlocked, place landing gear Normal control lever in NEUTRAL position.

(29) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(30) Install landing gear and shortening mechanism safety devices.
(Do not install safety device on telescopic brace strut lock of gear to be removed).

WARNING : SHORTENING LOCK SAFETY DEVICE SHALL BE INSTALLED.

(31) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : ADJUST HYDRAULIC POWER DELIVERY TO OBTAIN MINIMUM PRESSURE AND FLOW.

(32) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(33) With telescopic brace strut lock released, push the gear inboard a maximum of 3 degrees and maintain in this position.

(34) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(35) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(36) Trip, safety and tag the folling circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(37) Depressurize Green and Yellow hydraulic systems. (Ref, 29-11-00, Servicing and 29-21-00, Servicing).

(38) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(39) Remove brake cooling fans (Ref. 32-47-12, Removal/ Installation).

(40) Remove front deflector (Ref. 32-11-12, Removal/ Installation).

(41) Remove landing gear wheels (Ref. 12-37-00).

(42) Remove brake cooling fan motor and tachometer generator support assemblies (Ref. 32-47-11, Removal/ Installation and 32-43-35, Removal/Installation).

(43) Remove brake units (Ref. 32-42-11, Removal/ Installation).

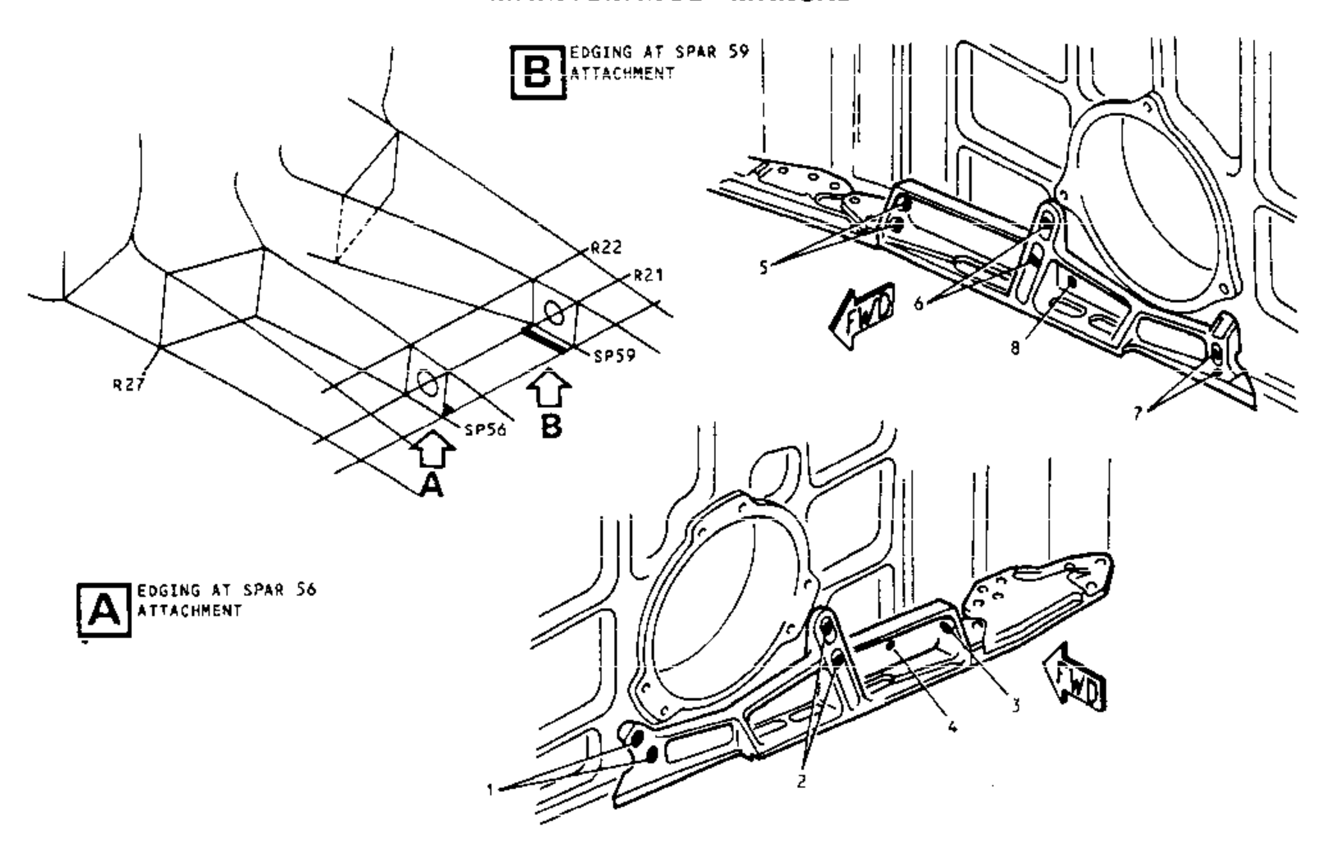
(44) Remove centre deflector (Ref. 32-11-13, Removal/ Installation).

(45) Remove sealing beads at various removal points.

(46) Fully deflate main gear shock absorber (Ref. 32-11-27, Servicing).

(47) Install safety collar 257600/78 on shock absorber of gear to be removed.

R (48) Main landing gear door LH or RH (Ref. Fig. 401)
R (a) At forward (Spar 56) between ribs 21, 22 :
R (a1) Remove nuts (1), (2) and (3).
R (a2) Remove the edging strip (4).



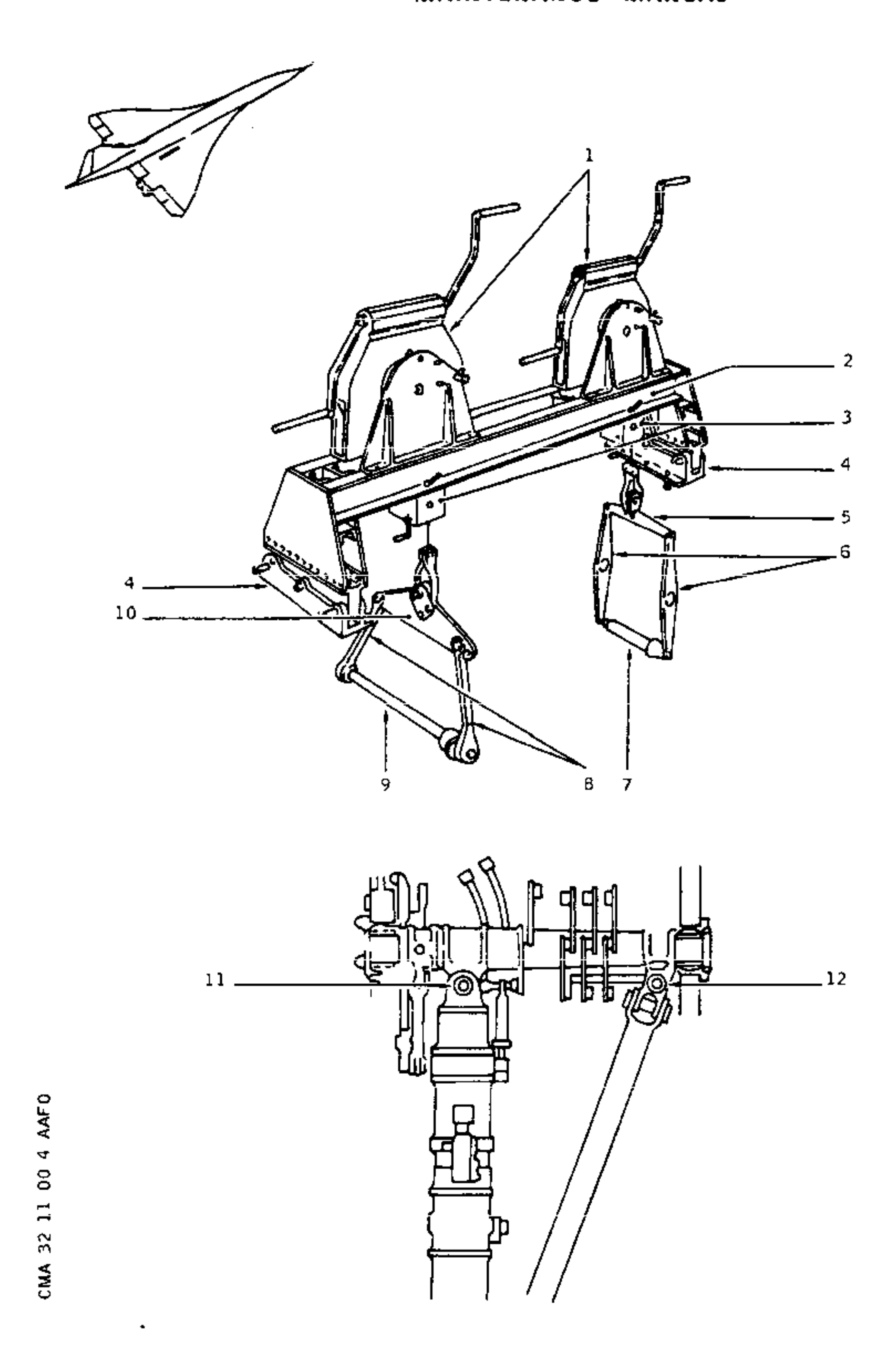
R Main Landing Gear Door, Edging Strip
Figure 401

R (b) At rear (Spar 59) between ribs 21, 22 :
R (b1) Remove nuts (5), (6) and (7).
R (b2) Remove the edging strip (8).

R (49) Install beam assembly D930700000 on wing upper surface.
R (Ref. Fig. 401 A)

(a) Installation and operation of beam assembly D93070000.

(a1) Install support fittings (4) on beam (2) in
R accordance with landing gear to be
R removed (LH or RH) .



Beam Assembly D93070000
Figure 401 A

R

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R
R

(a2) Remove access door 572 AT or 672 AT and position support fitting/beam assembly with or without hoists (1) on SPARS56 and 59 between RIBS21 and 22 and install with threaded pins.

(a3) If necessary install hoists (1) on beam.

(a4) Install forward and aft stirrup yokes (5), (10) and arms (6), (8) on corresponding cables.

(a5) Install stirrup pins (9) and (7) in leg/crossbeam shaft and crossbeam/drag strut shaft respectively and attach to corresponding stirrup arms.

(a6) Landing gear lowering and lifting is achieved by simultaneously operating the two hoists (1) with handles set to slow position.

NOTE : Lateral movement caused by the table winding/unwinding on the hoist drums is taken up by means of trolleys (3).

C. Remove
(Ref. Fig.402 and 403)

(1) Remove pin connecting outer shortening rod (13) to crank lever (14) A.

(a) Remove cotter pin (27).

(b) Immobilize retaining pin (23) using open end wrench 151000/78.

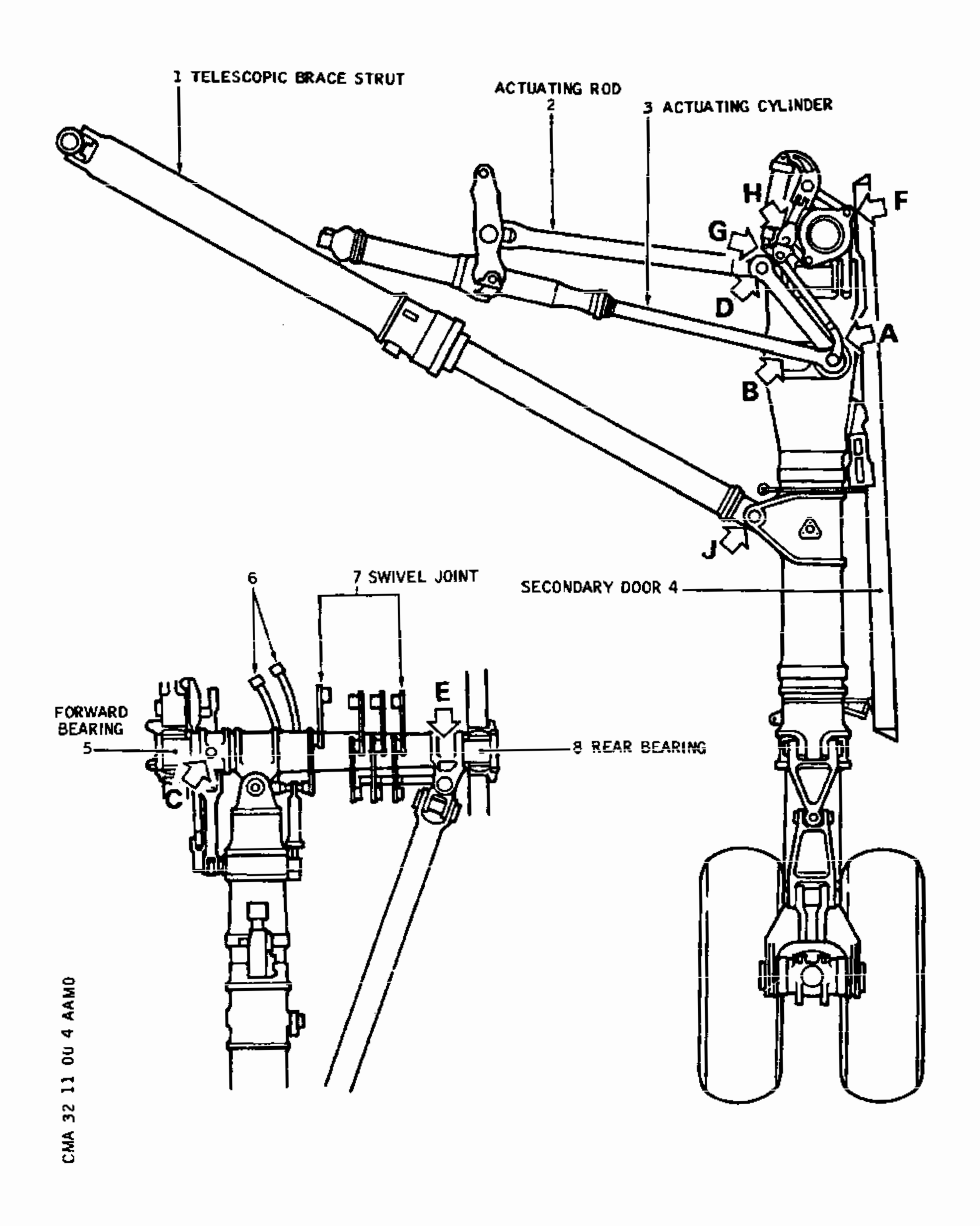
(c) Remove nut (26).

(d) Remove washer (28) and seal (25).

(e) Remove retaining pin (23).

(f) Find optimum position for which spring rod (12) is no longer in tension by pushing bottom of landing gear leg outboard or inboard.

NOTE : This position is located between 2 and 4 degrees from landing gear downlocked position.



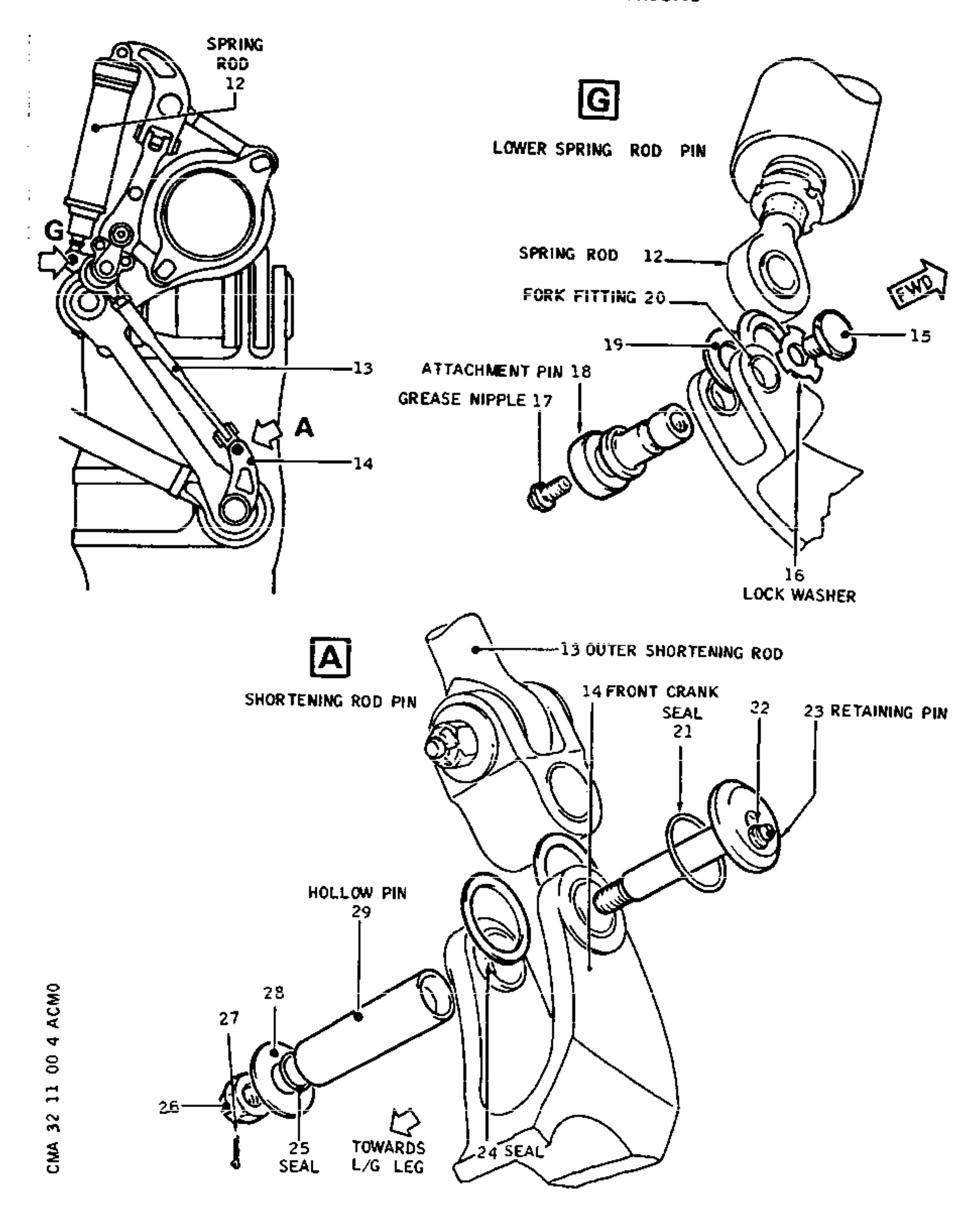
Main Landing Gear Leg Assy
Figure 402

EFFECTIVITY: ALL

R

BA

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Shortening Rod Pin, Spring Rod Pin
Figure 403

(g) Remove hollow pin (29) using extractor 249800/78.

NOTE : The mechanical shortening system is thus disconnected from the aircraft structure.

(h) Remove outer shortening rod (13) and retain seals (24) for reinstallation.

(2) Disconnect actuating cylinder rod (3) B.

(a) Disconnect actuating cylinder rod (Ref. 32-31-21, Removal/Installation).

NOTE : The spherical bearing remains attached to leg.

WARNING : SUPPORT ACTUATING CYLINDER (3) TO PREVENT IT TIPPING OVER.

(b) Fully retract actuating cylinder rod using AIR/ HYDRAULIC test set.

(3) Remove front trunnion nut (30)

**ON A/C 001-002,
(Ref. Fig. 404)

After SB 32-039 For A/C 001-002,

(Ref. Fig. 405)

(a) Disconnect three rods (33) from front spherical bearing (Ref. 32-11-11, Removal/Installation).

(b) Cut and remove lockwire and remove two attachment bolts (31) from two lock plates (32).

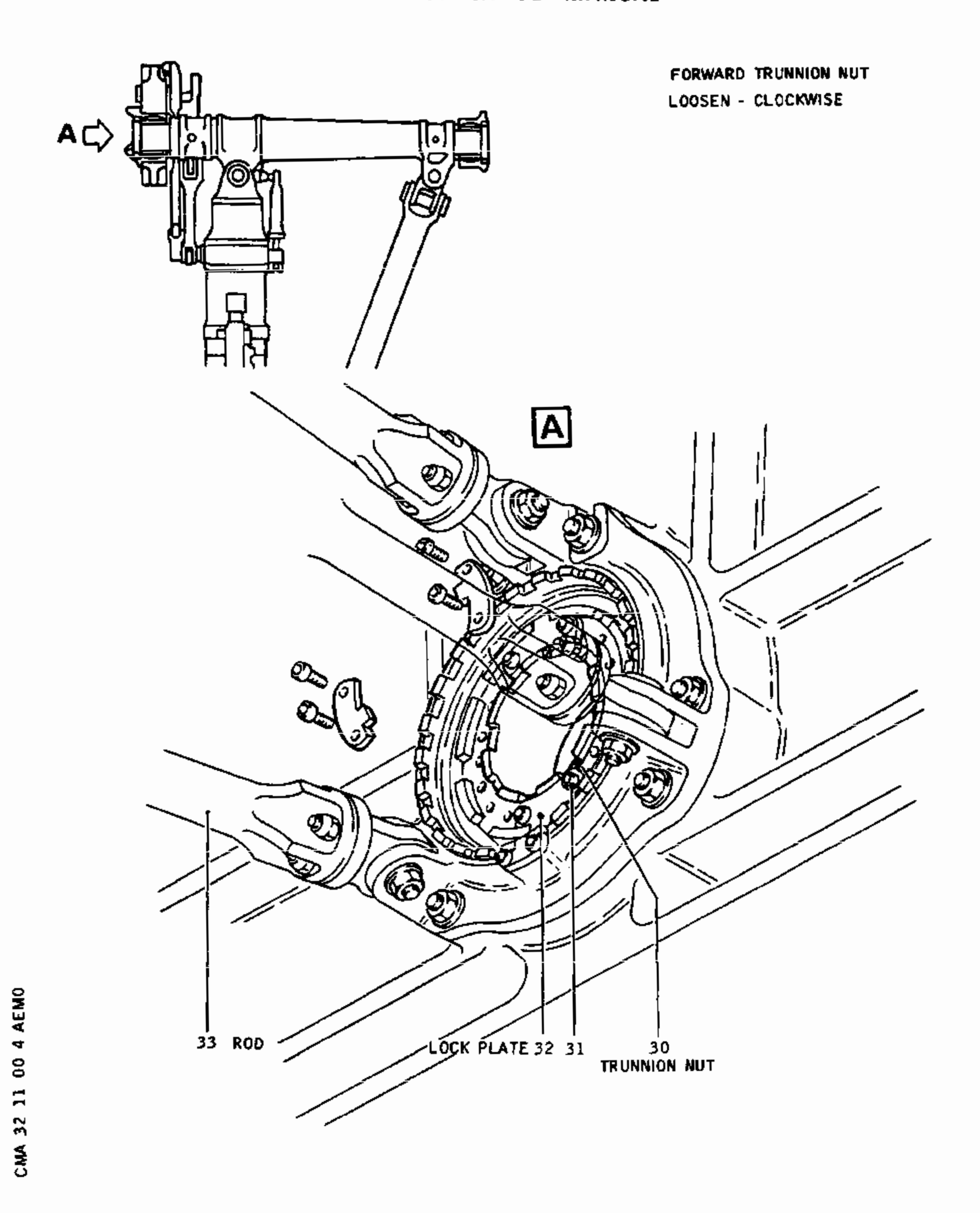
(c) Retain plates and bolts for reinstallation.

(d) Loosen trunnion nut (30) using claw wrench 248100/78.

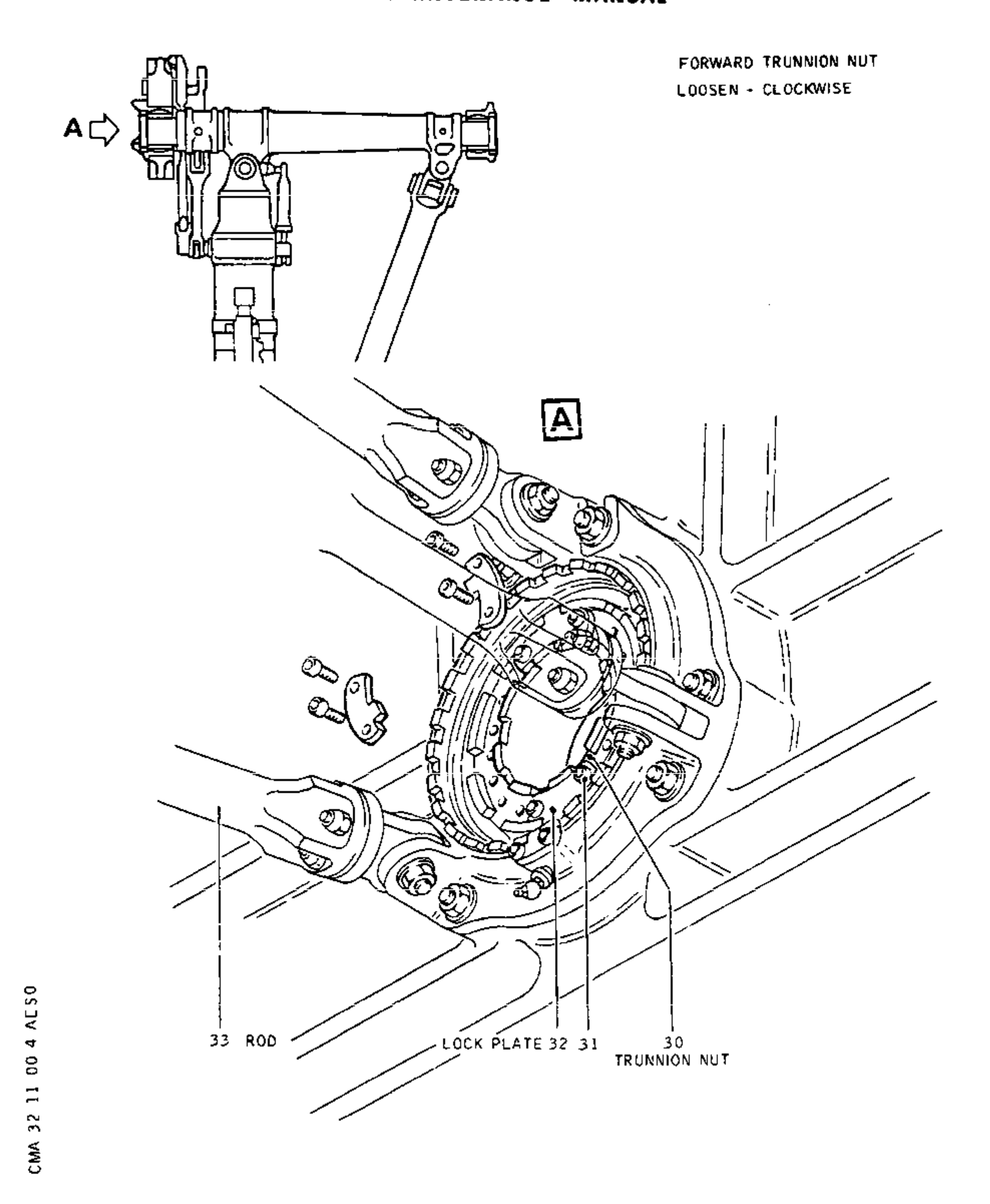
NOTE : This trunnion nut (30) is torqued to between 40 and 50 m.daN (295.024 and 368.781 lbf.ft.).

CAUTION : TO UNSCREW, TURN IN CLOCKWISE DIRECTION DO NOT UNSCREW MORE THAN ONE TURN.

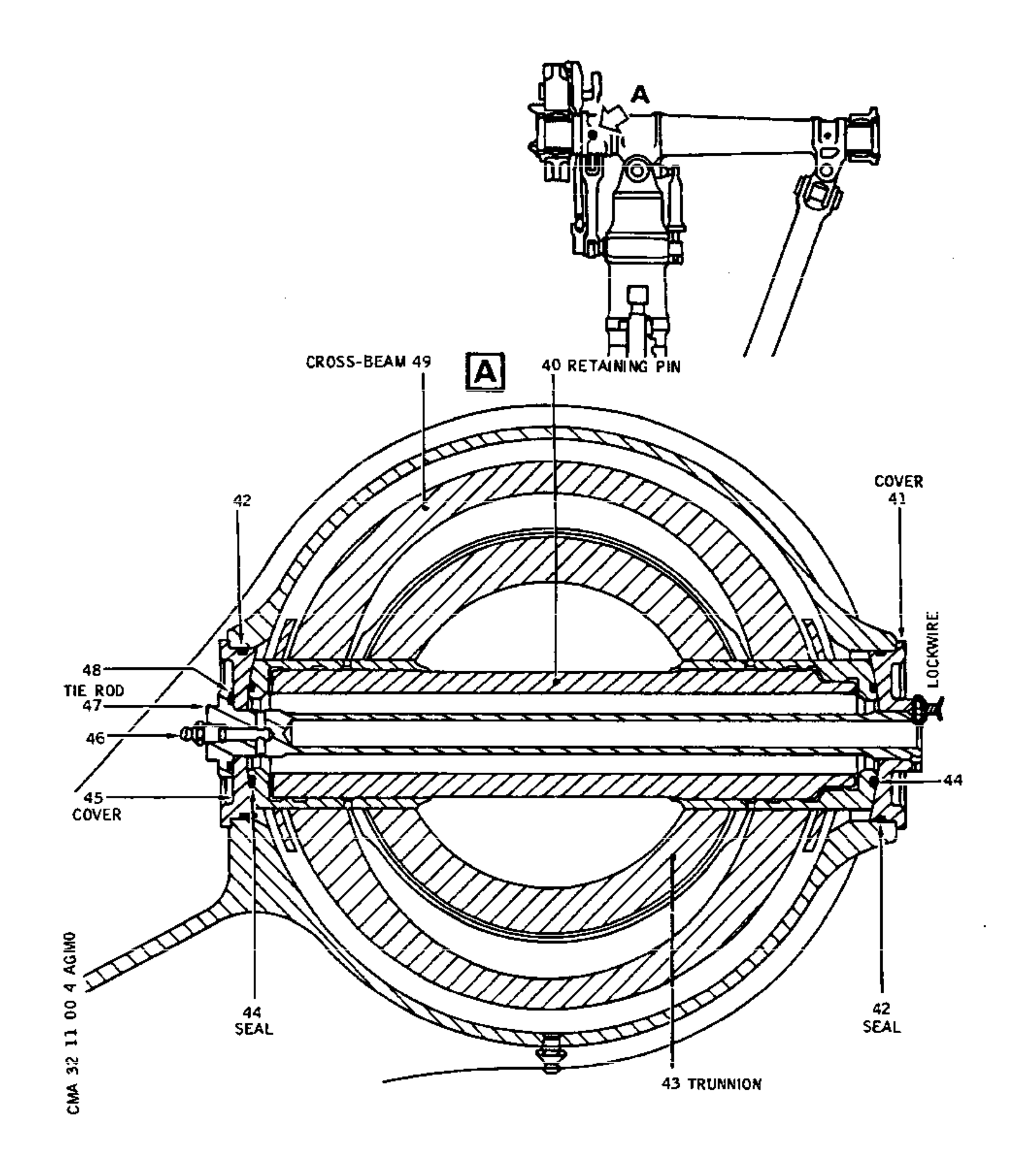
(4) Remove front trunnion retaining pin (40)
(Ref. Fig. 406)



Loosening of Front Trunnion Nut
Figure 404



Loosening of Front Trunnion Nut
Figure 405



Front Trunnion Retaining Pin
Figure 406

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(a) Cut and remove lockwire.

(b) Remove tie-rod (47).

(c) Remove covers (41) and (45).

(d) Remove trunnion retaining pin (40) using extractor 248300/78.

(5) Remove actuating rod (2) attachment pin (D) (Ref. Fig. 407)

NOTE : This pin also retains the upper actuating brace truss rod (60) and lower brace truss rod (61),

(a) Cut and remove lockwire and remove bolts (62).

(b) Remove nut (63) using wrench 249400/78.

CAUTION : LEFT HAND THREAD.

(c) Remove spindle (69).

(d) Remove two retainers (64) and retain seals (65) for reinstallation.

(e) Remove pin (68) using extractor 249600/78.

(f) Remove actuating rod (2) and hold upwards.

(g) Retain seals together with bushes (67) on either side of actuating rod (2) spherical bearing for reinstallation.

(h) Draw lower actuating brace truss rod (61) downwards.

(i) Retain seals (66) for reinstallation.

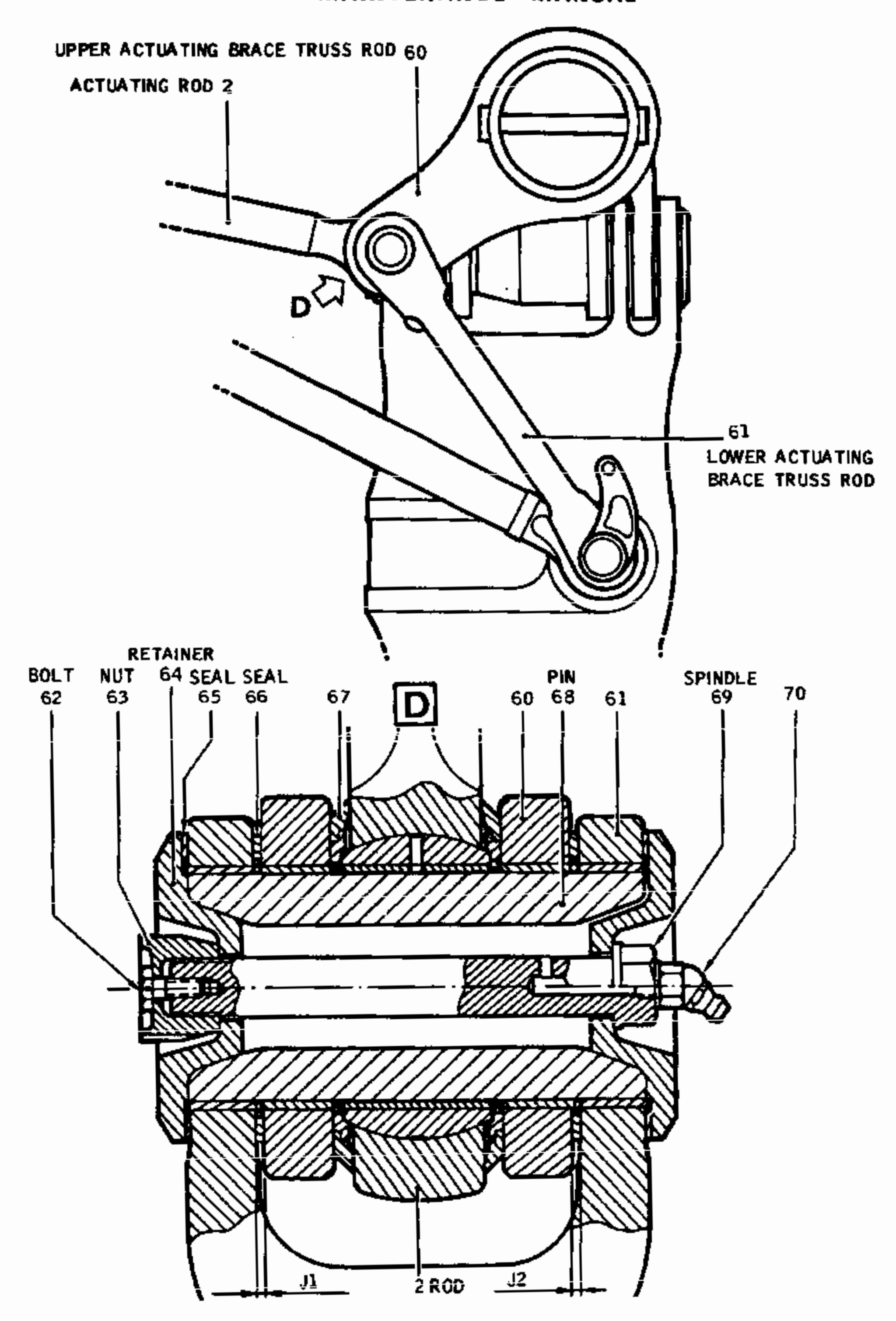
NOTE : Attach these seals on each side of fork fitting at their respective locations, taking care not to reverse them.

(6) Remove trunnion retaining pin (83) E (Ref. Fig. 408)

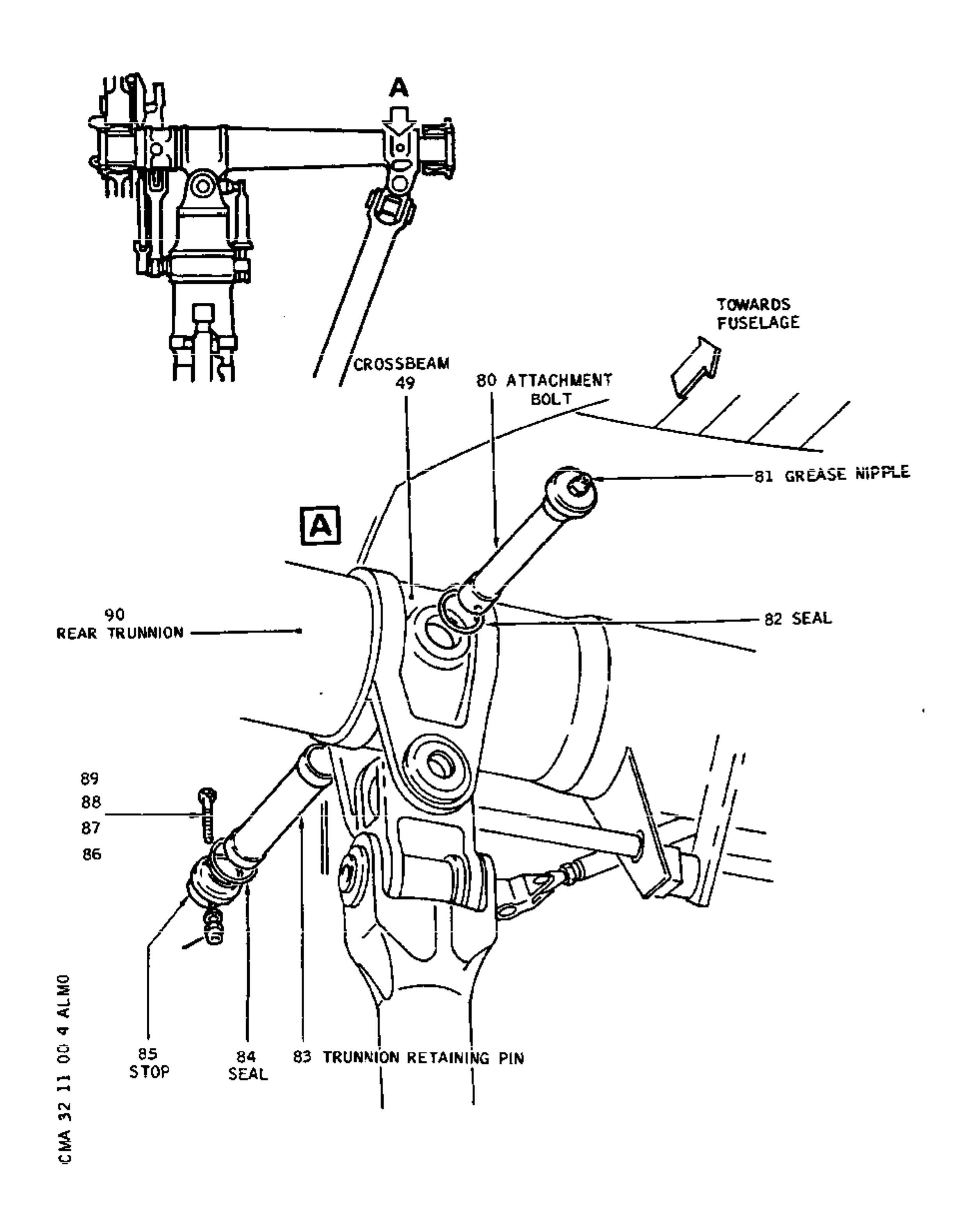
(a) Remove cotter pin (89).

(b) Remove nut (88) and retain washer (87) for re-installation.

(c) Remove bolt (86).



Actuating Rod Attachment Pin
Figure 407



Rear Trunnion Retaining Pin
Figure 408

(d) Remove stop (85).

(e) Drive out attachment bolt (80).

(f) Remove trunnion retaining pin (83) using extractor 248600/78.

(7) Remove pins connecting upper compensation rod (95) and lower compensation rod (97) to compensation crank (96) F.
(Ref. Fig. 409)

NOTE : The two attachment pins are identical except for the grease nipples.

(a) Lift upper actuating brace truss rod (60) at least 20 degrees to allow removal of pin attaching lower compensation rod (97) to compensation crank (96).

(b) Lift tab of lock washer (105).

(c) Remove nut (104) using peg end wrench 179100/78 and open end wrench 256200/78.

(d) Remove and discard lock washer (105).

(e) Remove washer (103).

(f) Drive out retaining pin (98).

(g) Remove hollow pin (102) from upper rod using extractor 179300/78.

(h) Remove upper compensation rod (95) upwards.

(i) Retain seals (100) for reinstallation.

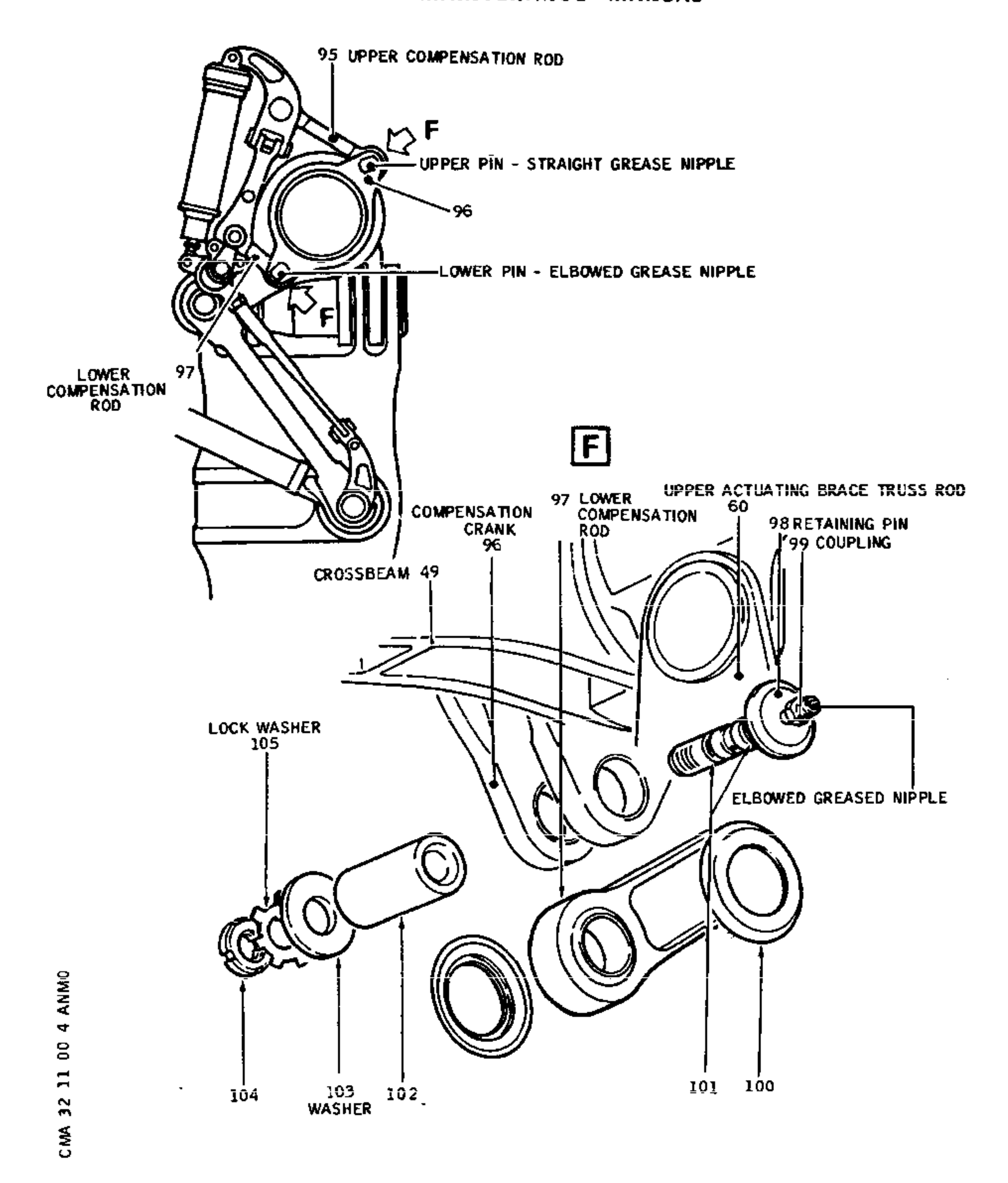
(j) Proceed in same way for lower compensation rod (97).

(k) Turn compensation crank (96) to allow removal of lower compensation rod (97).

NOTE : LH leg : clockwise
RH leg : anti clockwise

(l) Retain seals (100) for reinstallation.

(m) After removing two compensation rod (95) and (97) pins, refit actuating brace truss rods (60) and (61) in their original positions.



Compensation Rod - Compensation Crank Linkage
Figure 409

(8) Remove lower attachment pin of spring rod (12) (Ref. Fig. 403, Detail G).

(a) Lift tab of lockwasher (16).

(b) Remove bolt (15).

(c) Remove and discard lockwasher (16).

(d) Remove pin (18).

(e) Lift spring rod (12) up as far as possible.

(f) Retain seal (19) for reinstallation.

NOTE: Securely attach spring rod (12) in up position.

B (9) Remove rocker arm retainer rod (114) (Ref. Fig. 410).

(a) Remove cotter pin (112).

(b) Remove nut (111).

(c) Retain washer (113) for reinstallation.

(d) Drive out pin (116).

B (e) Remove retainer rod (114) from spherical bearing (117) fixed on aircraft structure.

(f) Retain seals (115) for reinstallation.

(g) Withdraw rocker arm (110) inboard to avoid fouling lower compensation rod (97) and crossbeam when removing landing gear leg.

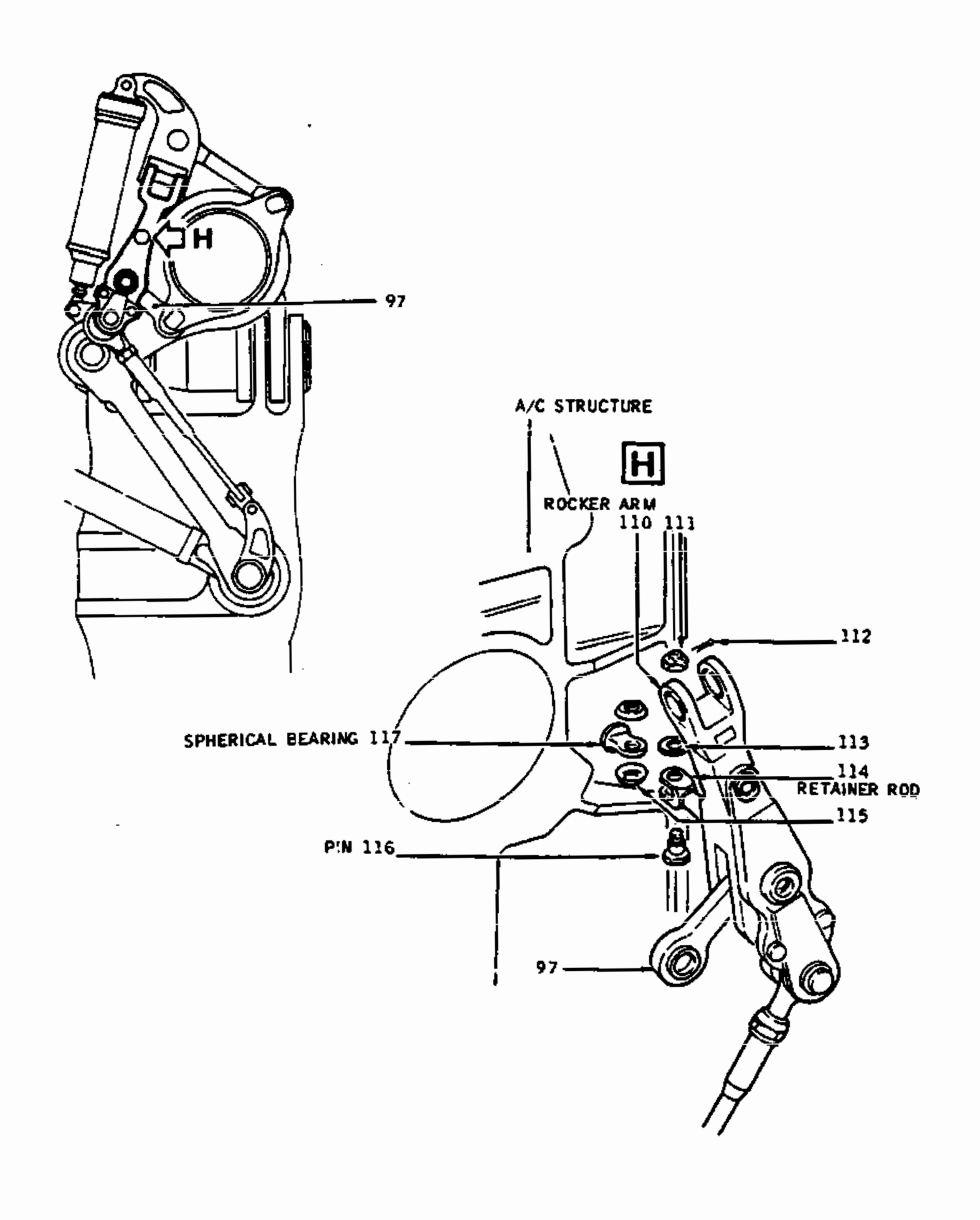
B (10) Hydraulic connections on swivel joints (Ref. Fig. 410A and 410B).

B (a) Disconnect hydraulic delivery and return lines from torque link swivel joint (7) at crossbeam (see Fig. 402).

(b) Cap swivel joint ports and lines.

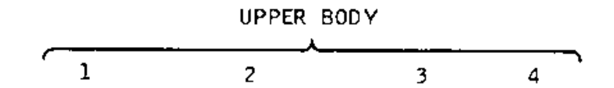
(c) Remove attachment bolts of swivel joint fixed bodies at crossbeam.

RB
RB



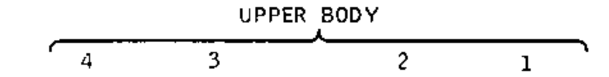
CMA 32 11 00 4 ACMO

Rocker Arm Auxiliary Rod Attachment
Figure 410



SWIVEL JOINT NORMAL BRAKE SYSTEM
SWIVEL JOINT EMERGENCY BRAKE SYSTEM
SWIVEL JOINT SHORTENING LOCK SYSTEM
SWIVEL JOINT SHORTENING CYLINDER SYSTEM
A B A B A B C C A B
CROSS BEAM
D F E F E D
C D C D D
SHORTENING JACK
5 6 7 8
CAUTION LOWER BODY
PAY PARTICULAR ATTENTION TO PIPE RUN IN THIS AREA. DIFFERENT TO RH SIDE.
DRAG STRUT
FRONT
CM 32 11 00 003A

SWIVEL FITTINGS
HYDRAULIC LOCATION AND CONNECTIONS
LEFT-HAND INSTALLATION
FIGURE 410A



SWIVEL FITTINGS
HYDRAULIC LOCATION AND CONNECTIONS
RIGHT-HAND INSTALLATION
FIGURE 410B

SYSTEM	BODY	HYDRAULIC CONNECTIONS	
		INDEX	FUNCTIONS
NORMAL BRAKE	1 (UPPER)	A B	NORMAL SUPPLY RESERVOIR RETURN LINE
	5 (LOWER)	C D	SUPPLY RESERVOIR RETURN LINE
EMERGENCY BRAKE	2 (UPPER)	A B	EMERGENCY SUPPLY RESERVOIR RETURN LINE
	6 (LOWER)	C D	EMERGENCY SUPPLY BLANKED OFF
SHORTENING LOCK	3 (UPPER)	A B C	SUPPLY RESERVOIR RETURN LINE SERVICE
	7 (LOWER)	D E F	SUPPLY RESERVOIR RETURN LINE SERVICE
SHORTENING CYLINDER	4 (UPPER)	A B C	NORMAL EXTENSION SHORTENING EMERGENCY EXTENSION
	8 (LOWER)	D E F	NORMAL EXTENSION SHORTENING EMERGENCY EXTENSION

HYDRAULIC CONNECTIONS ON SWIVEL JOINTS
LEFT-HAND AND RIGHT-HAND INSTALLATIONS
R TABLE 1 (See Figures 410A & 410B)

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B (11) Electrical connections (Ref. Fig. 402)

(a) Disconnect landing gear leg electrical harness plugs (6).

R (a1) LH leg

- outer wheels electrical harness U5016
- inner wheels electrical harness U5015
- flat tyre detection system electrical harness U5014.

(a2) RH leg

- outer wheels electrical harness U6016
- inner wheels electrical harness U6015
- flat tyre detection system electrical harness U6014.

(12) Remove pin attaching telescopic brace strut to landing gear leg.

(a) Remove telescopic strut (Ref. 32-31-28, Removal/Installation).

(b) Hold strut with beam assembly D930702000.

(13) Unload forward and rear bearings (5) and (8).

Attach cables of Removal/Installation beam assembly D930700000 to lifting fittings and pull tight in order to take weight of landing gear leg off bearings.

(14) Forward bearings (5).

**ON A/C 001-002,
(Ref. Fig. 404)

After SB 32-039 For A/C 001-002,

(Ref. Fig. 405)

(a) Fully unscrew trunnion nut (30) using claw wrench 248100/78.

CAUTION : UNSCREW IN CLOCKWISE DIRECTION.

(b) Install fixture 248200/78.

(c) Push front trunnion (43) back into crossbeam (49).

(d) Remove fixture 248200/78.

(15) Rear bearing (8) (Ref. Fig. 408)

(a) Install fixture 248500/78.

(b) Push rear trunnion (90) fully into crossbeam (49).

(c) Remove fixture 248500/78.

(16) Disconnect leg (Ref. Fig. 411)

NOTE : The various items of the outer shortening mechanism : shortening rod (13) compensation rods (95) and (97) rocker arm (110) spring rod (12) must be held in the position shown in order to facilitate leg removal.

(a) Install safety collar 257600/78.

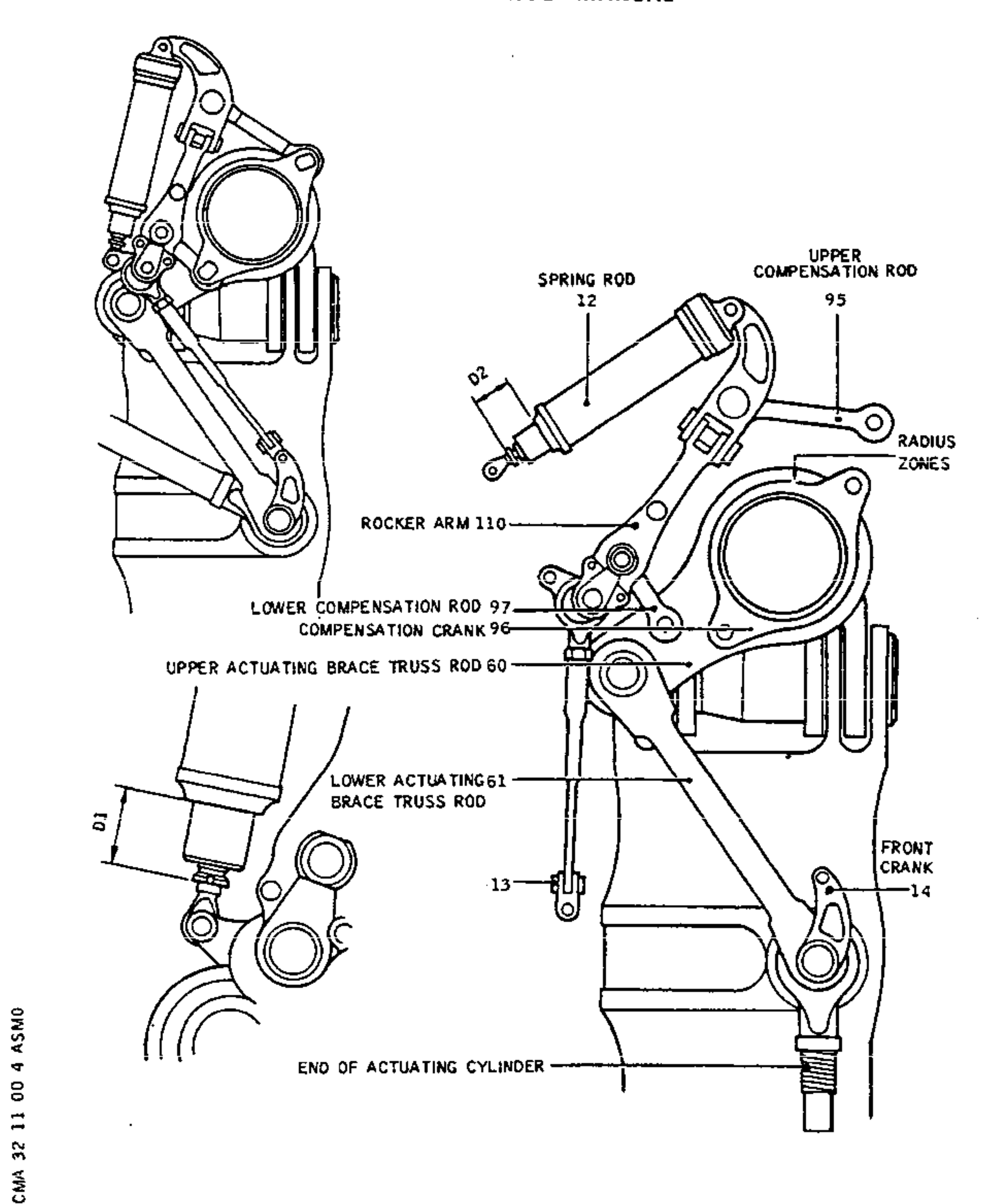
(b) Lower the gear leg using beam assy D930700000.

(c) Position leg on trolley D930704000.

(d) Allow shock absorber to compress until base of leg bottoms on safety collar 257600/78.

(e) Install fixture 257700/78 to immobilize bogie beam in relation to leg.

(f) Remove lifting fittings.



Configuration of Outer Shortening Rod Mechanism
Before Removal of Leg
Figure 411

NOTE : The landing gear leg when removed must be in the following configuration :

- Inner shortening system locked.
- Main shock absorber deflated.

D. Preparation of Replacement Component

(1) On removed component

(a) Not applicable.

(2) On new component

(a) For LH landing gear leg installation select main landing gear door control handle to open. Handle locked, indicator plate showing red.

(b) The landing gear leg must be in the following configuration.

(b1) Inner shortening system locked.

(b2) Shock absorber depressurized and safety collar 257600/78 installed.

(b3) Front and rear trunnions retracted into crossbeam.

(b4) Bogie beam immobilized in relation to leg by means of bracing fixture 257700/78.

(b5) Internal shortening shaft locked and secured by means of tool 257800/78.

E. Install

(1) Position leg under its bay.

(2) Install beam assembly D930700000 lifting fittings

- on leg crossbeam pin
- on drag strut crossbeam pin

(3) Fasten beam assy lifting cables to lifting fittings.

(4) Pull lifting cables tight using lifting beam assembly.

(5) Remove tools 257700/78, 257800/78.

(6) Check that compensation crank (96) is in correct

position.

CAUTION : FILLET RADIUS ZONES OF LOWER AND UPPER FORK FITTINGS WITH CYLINDRICAL BODY OF COMPENSATION CRANK MUST BE TURNED TOWARDS AIRCRAFT CENTRE LINE.

(7) Check that outer shortening mechanism is in the configuration shown on the figure.

NOTE : Take special care to avoid upper compensation rod (95) tipping downwards. Hold it in horizontal position.

(8) Remove fasteners attaching landing gear beam assembly D930704000.

(9) Lift landing gear leg.

NOTE : The shock absorber must be fully extended.

(10) Stop lifting operation as soon as front and rear trunnions are visually aligned with bearing bores.

(11) Smear bearing bores with a light coat of grease (Product No.051).

(12) Forward trunnion and bearing.

**ON A/C 001-002,
(Ref. Fig. 404, 406 and 412)

After SB 32-039 For A/C 001-002,

(Ref. Fig. 405, 406 and 413)

(a) Coat thread of seal bush (120) with Product No.059.

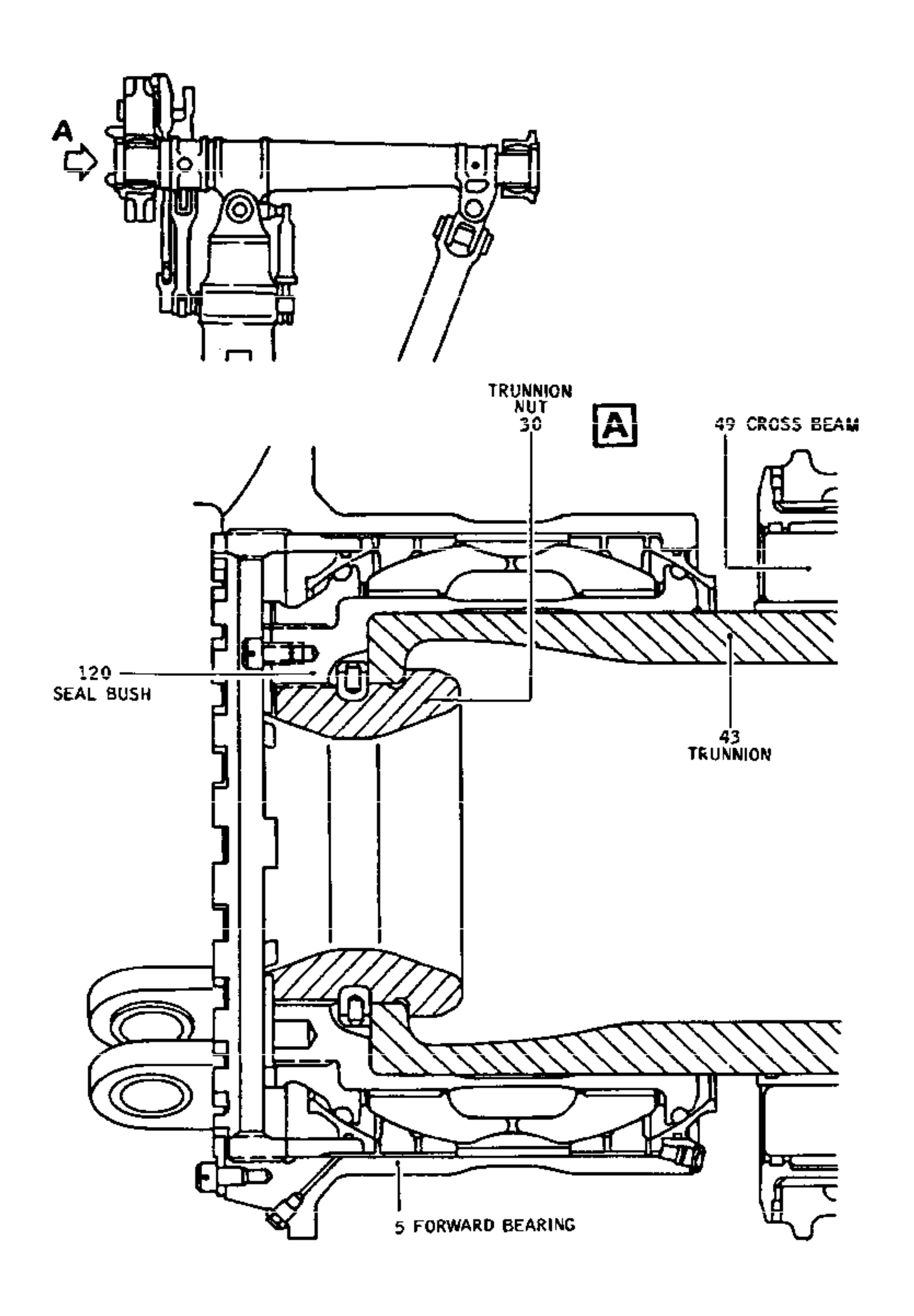
(b) Insert fixture 248200/78 through front bearing (5)

(c) Secure nut (30) with jaws of tool.

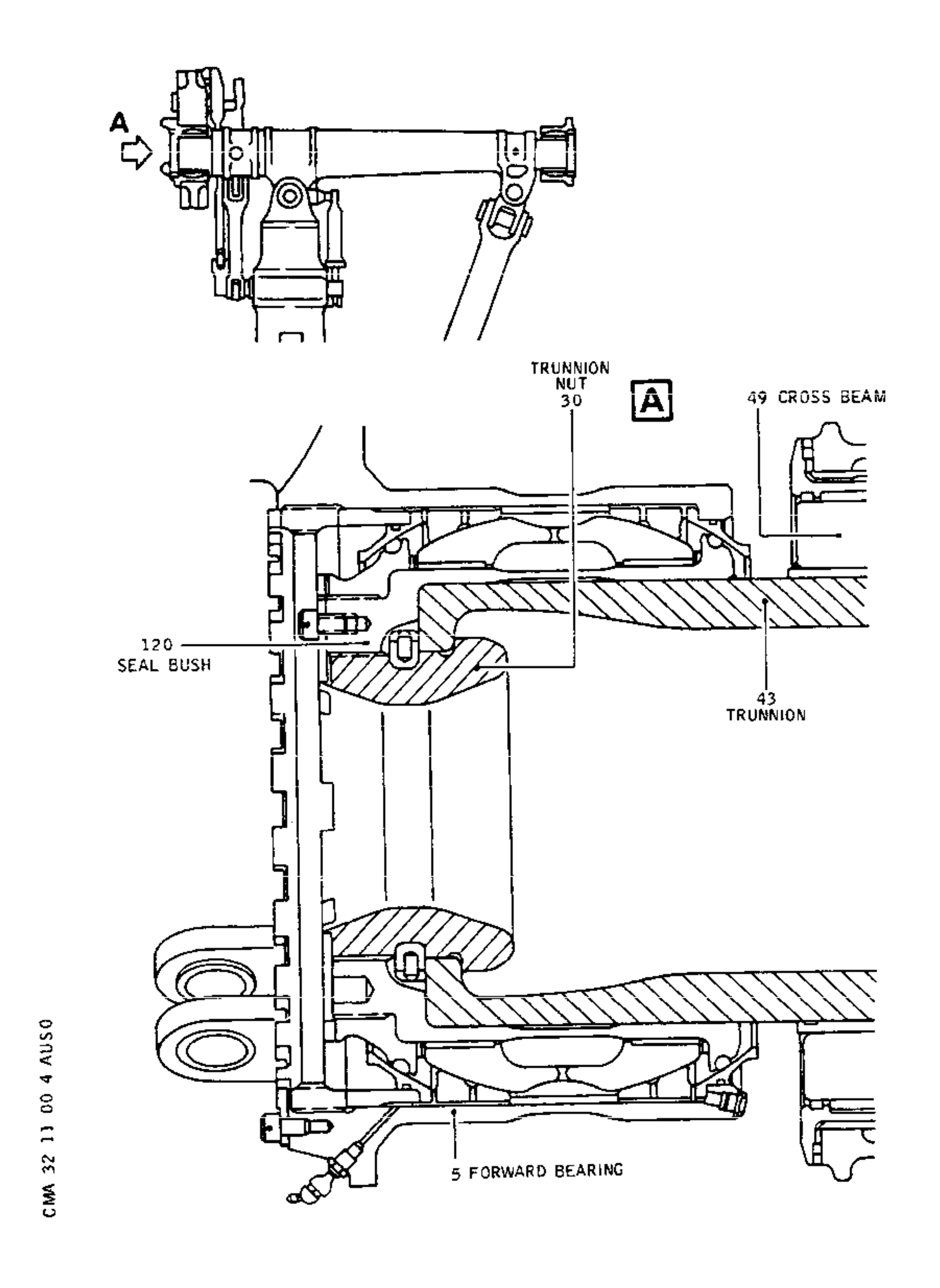
(d) Clamp tool shroud onto bearing (5) with associated screws.

(e) Enter trunnion (43) into bearing by manoeuvring tool threaded rod jaws by means of nut.

(f) When nut (30) bottoms against seal bush (120) screw nut (30) (in an anti clockwise direction)



Removal of Forward Trunnion
Figure 412



Removal of Forward Trunnion
Figure 413

until trunnion (43) comes into correct contact with bush (120).

CAUTION : DO NOT USE WRENCH TO APPLY TORQUE TO PRESCRIBED VALUES. THIS TORQUE WILL BE APPLIED AT A LATER STAGE.

(g) Remove fixture 248200/78.

(13) Rear trunnion and bearing (Ref. Fig.408 and 414)

(a) Insert fixture 248500/78 through bearing.

(b) Manoeuvre tool to secure end of trunnion (90) with jaws.

(c) Clamp tool shroud onto bearing.

(d) Insert trunnion (90) into bearing by manoeuvring tool threaded rod jaws by means of nut.

(e) Stop manoeuvre as soon as rear rigging pin holes are aligned with rigging holes on crossbean (49) and trunnion (90).

(f) Remove fixture 248500/78.

(14) Rear trunnion pin (Ref. Fig. 408)

(a) Grease trunnion retaining pin and crossbeam bearing surfaces (Product No.051).

(b) Install trunnion retaining pin (83) using olive assembly 248700/78.

(c) Check presence of seal (82) on attachment bolt (80) and insert bolt (80) into retaining pin (83).

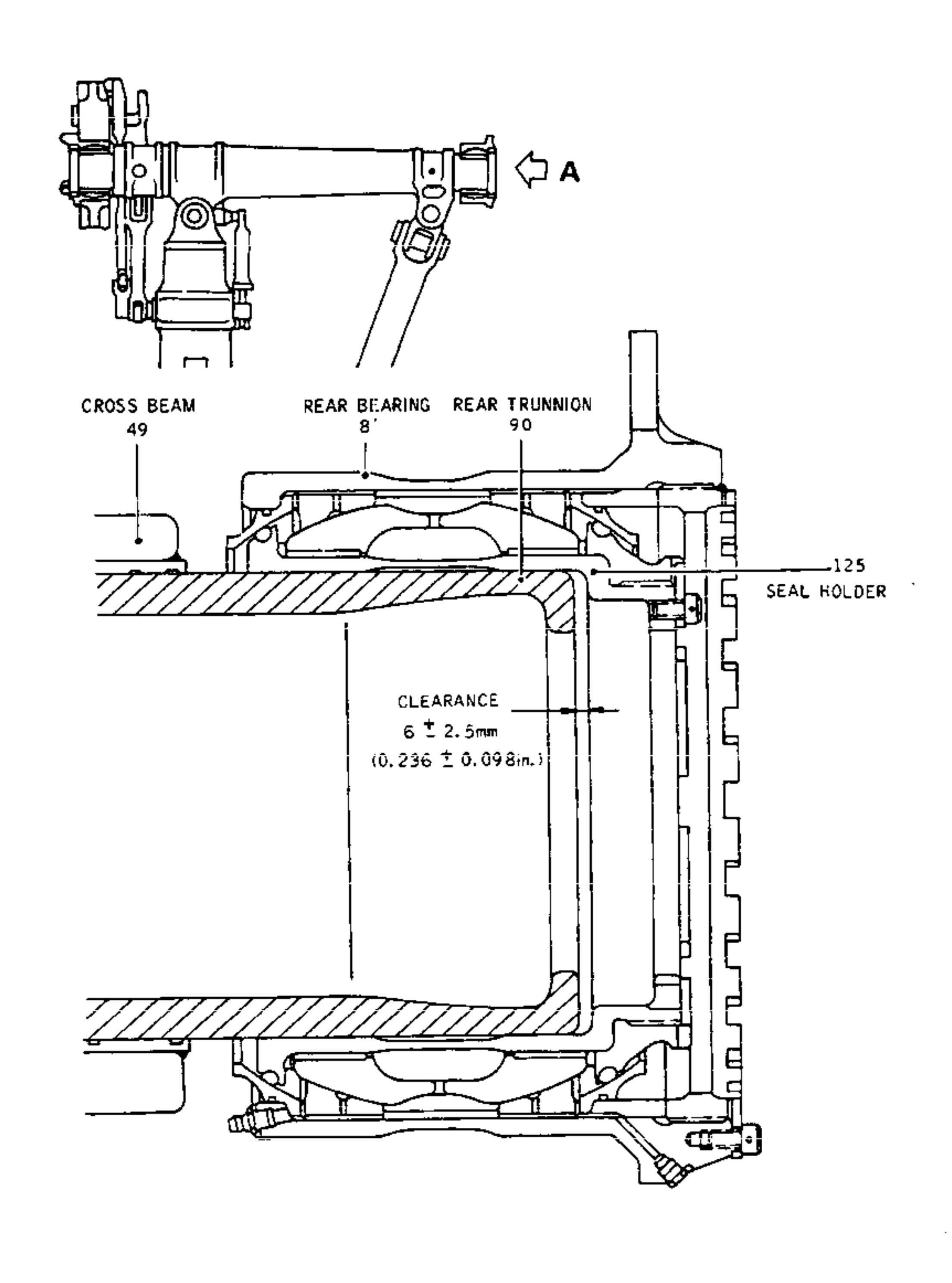
NOTE : The head of attachment bolt (80) must be on the aircraft centre line side.

(d) Install and orientate stop (85) with seal (84).

(e) Install set screw (86) with washer (87) and nut (88).

(f) Secure nut (88) with a cotter pin.

(g) Check the presence of grease nipple (81) on head of attachment bolt (80).



Removal of Rear Trunnion
Figure 414

(h) Seal around head of attachment bolt (80) and around inside and outside of stop (85) with Product No.352.

(15) Compensation rods (Ref. Fig.409 and 410)

(a) Move upper actuating brace truss rod (60) up 20° approx to allow installation of lower compensation rod (97) connecting pin.

(b) With rocker arm (110) in position shown, insert spherical end-fitting of lower compensation rod (97) fitted with its two seals (100) into lower compensation crank (96) fork fitting.

(c) Orientate rocker arm (110) and compensation crank (96) to align corresponding bores.

(d) Using tool 179400/78 install hollow pin (102) and retaining pin (98).

(e) Remove tool 179400/78.

(f) Install retaining pin (98).

(g) Install washer (103).

(h) Install a new lock washer (105) and tighten nut (104) with wrenches 179100/78 and 256200/78. Torque nut to between 6 and 7 m.daN (44.253 and 51.629 lbf.ft.).

(i) Fold tab of lockwasher into slot of corresponding nut.

(j) Return upper actuating brace truss rod (60) to its original position.

(k) Install upper compensation rod (95) connecting pin in the same way.

NOTE : The two joints are identical except for the grease nipple.
The upper pin has a straight nipple where as the lower pin has an elbowed nipple with intermediate coupling (99).

(16) Compensation rocker arm (110) retainer rod (114) (Ref. Fig. 410)

(a) Fit rod (114) with two lip seals (115) onto

aircraft pick-up.

(b) Align bores and fit pin (116).

(c) Install washer (113) and nut (112). Torque nut to between 1.1 and 1.4 m.daN (8.113 and 10.325 lbf.ft.).

(d) Lock nut (112) with a cotter pin.

(17) Front trunnion pin (Ref. Fig. 406)

(a) Reinstall actuating brace truss rod (60) in its final position

(b) Check alignment of holes for pin in compensation crank (96) and crossbeam (49).

(c) Lubricate bearing surfaces of pin with product No.051 and check presence of seals (44).

(d) Insert installation guide 248400/78 into pin and fit this assembly into crossbeam.

NOTE : The flat on the pin must be fitted vertically and turned outboard.

(e) Check presence of seal (42) on cover (45) and fit this cover taking care to fit it correctly onto flat on spindle.

(f) Check presence of seal (42) on cover (41) and fit this cover at the other end of pin (aircraft side).

(g) Insert tie-rod (47) and screw it onto cover (41). Torque to between 0.3 and 0.5 m.daN (26.552 and 44.253 lbf.in.).

(h) Safety tie-rod to outer cover with lockwire (Ref. 20-21-13) and check presence of grease nipple on head of tie-rod.

(j) Seal flange of tie-rod with Product No.352.

(18) Immobilize front trunnion flange

**ON A/C 001-002,
(Ref. Fig.404 and 414)

After SB 32-039 For A/C 001-002,

(Ref. Fig.405 and 414)

(a) Using wrench 248100/78 immobilize front trunnion nut (30) (anti-clockwise direction).
Torque to between 40 and 50 m.daN (295.024 and 368.781 lbf.ft.).

(b) Fit lock plates (32). If necessary use new plates and cut as required.

(c) Attach each lock plate by means of screws (31) and wirelock screws together.
Torque to between 0.3 and 0.6 m.daN (26.552 and 53.104 lbf.in.).

(d) Tighten front trunnion nut and check that there is clearance between end of trunnion (90) and seal holder (125) on rear bearing.

CAUTION : THIS CLEARANCE MUST BE 6 ± 2.5 MM (0.236 ± 0.098 in.) IN ORDER TO ABSORB ELASTIC DEFORMATIONS OF LANDING GEAR AND AIRCRAFT STRUCTURE.

(e) Connect three rods (33) at front spherical bearing (Ref. 32-11-11, Removal/Installation).

(19) Actuating rod attachment pin (Ref. Fig. 407)

(a) Lift lower actuating brace truss rod (61) and align its fork fitting bore with bore in upper actuating brace truss rod (60) fork fitting.

(b) Gradually insert hollow pin (68).

(c) Measure dimensions J1 and J2 to determine thickness of seals (66).

NOTE : There is a range of 5 seals the thickness of which varies from 1 to 3 mm (0.039 to 0.118 in.) in 0.5 mm (0.019 in.) increments.

(d) Remove pin (68) and fit appropriate seals (66).

(e) Insert actuating rod spherical end-fitting (2) (with its two seals (67) into upper actuating brace truss rod fork fitting.

(f) Fit hollow pin (68) using installation guide 249700/78.

(g) Place a 1 mm thick (0.039 in.) seal (65) on either side of lower actuating brace truss rod fork fitting side faces.

(h) Fit retainers (64) and insert spindle (69) with its head towards rear of aircraft.

(j) Install nut (63) using wrench 249400/78.

CAUTION: LH THREAD.
Torque to between 1.5 and 2 m.daN (11.063 and 14.751 lbf ft).

(k) Install bolt (62) and safety with lockwire (Ref. 20-21-13).

(l) Check presence of grease nipple (70) on head of pin.

(20) Attach actuating cylinder rod

(a) Extend cylinder rod using AIR/HYDRAULIC test set and install rod (Ref. 32-31-21, Removal/Installation).

(21) Lower attachment pin of spring rod (Ref. Fig. 403)

(a) Lubricate attachment pin (18) and spherical bearing of spring rod (12) end fitting with Product No.051.

(b) Install a seal (19) on either side of spring rod (12) spherical bearing end and insert end into fork fitting (20).

(c) Align bores and install pin (18).

(d) Install a new lock washer (16) and install bolt (15). Torque to between 0.8 and 1 m.daN (70.806 and 88.507 lbf in.). Fold one tab of lock washer onto head of pin.

(e) Check presence of grease nipple (17) on head of attachment pin.

(22) Attach telescopic brace strut to landing gear leg (Ref. 32-31-28, Removal/Installation).

(23) Attach outer shortening rod (13) (Ref. Fig. 403)

R B (a) Measure dimension D2 of spring rod (12).

(b) Install a seal (24) on either side of shortening rod (13) link and push on landing gear leg until link engages in front crank (14) fork end. Find optimum position for which hollow pin (29) can be inserted easily.

(c) Lubricate hollow pin (29) and retaining pin (23) and seal (21) with product No.051 and install
B using tool 249900/78.

(d) Install seal (25) in its recess then fit washer (28) and install nut (26) with wrench 15100/78. Torque to between 2.5 and 3 mdaN (18.439 and 22.126 lbf ft). Safety nut (26) with cotter pin.

(24) Check spring rod (12) tension (Ref. Fig. 411).

(a) Using AIR/HYDRAULIC test set, supply actuating cylinder (3) in 'down' direction until telescopic brace strut (1) locks.

(b) Measure dimension D1 of spring rod (12) in landing gear downlocked configuration and compare it with spring rod fully released value D2. The difference between these two values must be 5 +/- 2 mm (0.196 +/- 0.0787 in).

B (25) Check angular adjustment of landing gear leg (Ref.
B 32-31-28, Removal/Installation).

B (26) Hydraulic connections (Ref. Fig. 410A and 410B).

(a) Disconnect AIR/HYDRAULIC test set hoses from actuating cylinder.

(b) Connect aircraft hoses to cylinder.

RB (c) Attach top body of the torque link swivel joints
RB to the aircraft structure - shims are not to be
RB fitted at the aircraft connection.

RB (d) Allow the swivel joints to hang ensuring that
RB they remain vertical.

RB (e) Attach the lower body of the swivel joints to the
RB undercarriage leg by inserting shims between the
RB undercarriage leg and the vertical swivel joint.

RB NOTE: It is imperative that no shims are installed between the aircraft structure and the swivel joints.

RB The swivel joint must hang vertical - any angular slant will result in increased stresses and could result in hydraulic leaks and/or premature failure of the component.

R (f) Connect swivel joint return and supply lines.

B (27) Electrical connections (Ref. Fig. 402)

B (a) Connect harness plugs (6) to aircraft structure sockets.

R B (a1) LH leg

B
- outer wheels electrical harness U5016
- inner wheels electrical harness U5015
- flat tyre detection system electrical harness U5014.

(a2) RH leg

B
- outer wheels electrical harness U6016
- inner wheels electrical harness U6015
- flat tyre detection system electrical harness U6014.

(28) Install servo-valves (Ref. 32-43-63, Removal/Installation).

(29) Remove lifting fittings from crossbeam/leg pins and fixed strut/crossbeam pin.

(30) Remove tool D930700000 (Ref. Fig. 401A).

(31) Main landing gear door LH or RH (Ref. Fig. 401).

(a) At forward (Spar 56) between ribs 21 and 22:

(a1) Install edging strips (4).
(a2) Install nut (3).
(a3) Install nuts (1) and(2) and torque to 0.294 mdaN (26.040 lbf in).

R (b) At rear (spar 59) between ribs 21, 22 :
R (b1) Install edging strips (8).
R (b2) Install nut (5).
R (b3) Install nuts (6), (7) and torque to
R 0.294 mdaN (26.040.Ibf. in).

R (32) Remove tool 257600/78

R (33) Seal marked areas with Product No.352.

R (34) Fully lubricate landing gear (Ref. 12-22-32).

R (35) Charge shock absorber (Ref. 32-11-27, Servicing).

R (36) Charge pitch dampers (Ref. 32-11-31, Servicing).

R (37) Install brake units (Ref. 32-42-11, Removal/ Installation).

R (38) Install sleeve 258200/78 on each axle.

R (39) Install brake unit/sleeve 258200/78 assembly on each wheel axle using corresponding nut.

R (40) Not applicable.

R (41) Remove safety clips and tags and reset circuit breakers.

R (42) Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

R (43) Pressurize Green and Yellow hydraulic tanks. (Ref. 29-13-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

R (44) Remove landing gear and shortening mechanism safety devices.

R (45) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing). Adjust hydraulic power delivery to allow a slow gear retraction.

R (46) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

R (47) During slow landing gear retraction, visually check that shortening system operates correctly.

R (48) With landing gear held in up position check that uplocking is positive.

NOTE : Landing gear doors remain open.

R (49) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

WARNING : DISPLAY A WARNING NOTICE IN FLIGHT COMPARTMENT PROHIBITING OPERATION OF LANDING GEAR NORMAL CONTROL LEVER.

R (50) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (51) Adjust landing gear uplock (Ref. 32-31-15, Removal/Installation).

R (52) Check adjustment of shortening mechanism (Ref. 32-11-34, Adjustment/Test).

R (53) Check that none of the landing gear leg accessories foul landing gear bay structure and its various components.

WARNING : CHECK THAT LANDING GEAR NORMAL CONTROL LEVER IS IN NEUTRAL POSITION.

(54) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : CHECK THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

R (55) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

R (56) With landing gear down, check that it is locked. On First Officer's instrument panel, on gears position indicating unit, make certain that the four green arrows are illuminated.

R (57) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

R (58) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (59) Install landing gear and shortening mechanism safety devices.

R (60) Not applicable.

R (61) Bleed Normal (Ref. 32-43-00, Servicing) and Emergency (Ref. 32-44-00, Servicing) brake systems.

R (62) Install brake cooling fan and tachometer generator support assemblies (Ref. 32-43-35, Removal/Installation, and 32-47-11, Removal/Installation).

R (63) Install centre deflector (Ref. 32-11-13, Removal/Installation).

R (64) Remove tools 258200/78 from wheel axles.

R (65) Install Wheels (Ref. 12-37-00).

R (66) Install front deflector (Ref. 32-11-12, Removal/Installation).

R (67) Install brake cooling fans (Ref. 32-47-12, Removal/Installation).

<u>NOTE</u> : Do not install debris guard assemblies.

R (68) Remove landing gear and shortening mechanism safety devices.

<u>WARNING</u> : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

R (69) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).
Adjust hydraulic power delivery to allow a slow gear retraction.

R (70) On First Officer's instrument panel, place landing gear Normal control lever in UP position then back to NEUTRAL position as soon as gear has retracted approximately 10 degrees.

R (71) Position gear to facilitate installation of secondary door and maintain in this position.

R (72) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (73) Trip safety, and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS CLOSE SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

R (74) Install secondary door and its tension assemblies (Ref. 32-12-12, Removal/Installation).

R (75) Remove safety clips and tags and reset circuit breakers

WARNING : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

R (76) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (77) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

R (78) With gears downlocked, place landing gear Normal control lever in NEUTRAL position.

R (79) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (80) Install landing gear and shortening mechanism safety devices.

R (81) Not applicable.

R (82) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

R (83) Remove safety collars from door actuating jacks.

R (84) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (85) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(86) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(87) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Tests

(1) Perform landing gear Normal retraction and extension (Ref. 32-31-00, Adjustment/Test).

(2) Check that main landing gear wheels are braked during retraction (Ref. 32-46-00, Adjustment/Test).

(3) Perform landing gear Emergency extension manoeuvre. (Ref. 32-32-00, Adjustment/Test).

(4) Check that main gear weight microswitches operate correctly (Ref. 32-31-93, Removal/Installation).

(5) Perform a tachometer generator functional test (Ref. 32-43-35, Adjustment/Test). Install debris guard assemblies.

(6) Perform on Emergency braking operational test (Ref. 32-44-00, Adjustment/Test).

(7) Perform a system self-test on Flat Tyre Detection System (Ref. 32-48-00 Adjustment/Test).

RB (8) Perform a brakes temp indicator test (Ref. MM
RB 32-43-00 P/B 500 Para. 2. G) to verify correct
RB electrical connection of the brake temperature
RB monitoring system.

G. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors.

(4) Remove safety barriers and check that area under aircraft is clear.

(5) Remove safety stay.

(6) Lower aircraft onto its wheels.

(7) Remove warning notice from flight compartment.

MAIN GEAR - INSPECTION/CHECK

WARNING: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Check that main Landing Gear is vertical after changing a leg or telescopic brace strut.

B. Check that main wheels are parallel to aircraft centre line when a leg, torque links, bogie beam or main shock absorber have been changed.
Check fits and clearances of torque links.

C. Check of spherical bearings following a hard landing.

B D. Check of main landing gear lower bearing assembly clearances.

RB E. Damage to MLG retraction jack lower eye end grease seals.

2. Check Verticality of Main Landing Gear

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - lifting capability greater than 183440 lb (83208 Kg)	07-10-0001
Safety jack adapter	D920113200
Jacking pad - nose	D925370000
Balancing device - pyramid adapter LH	D921485000
Balancing device - pyramid adapter RH	D921485001
Pyramid adapter - lifting LH	D924008000
Pyramid adapter - lifting RH	D924008001
Safety stay	-
Sighting tube	-
Sighting rod - wing	E920115312
Sighting rod - fuselage	E920115112

DESCRIPTION	PART NO.
Sighting rod - fuselage	E920115114
Tripod mounted telescopic tube	-
Clinometer	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Install safety stay.

(6) Carry out aircraft transversal and longitudinal levelling (Ref. 08-11-00).

C. Check Verticality of Main Landing Gear

(1) Place a clinometer on chrome plated part of main landing gear shock absorber sliding tube, perpendicular to aircraft centre line.

(2) Measure angle.

(a) This angle must be at 90 degrees to horizontal aircraft datum.

NOTE: A positive rake of +15 minutes (leg inclined towards aircraft centre line) is permissible. A negative rake is not permissible.

D. Close-Up

(1) Remove levelling tools.

(2) Make certain that the area under the aircraft is clear.

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

3. Check Alignment of Main Wheels and Fits and Clearances of Torque Links

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - lifting capability greater than 183440 lb (83208 Kg)	07-10-0001
Safety jack adapter	D920113200
Jacking pad - nose	D925370000
Balancing device - pyramid adapter LH	D921485000
Balancing device - pyramid adapter RH	D921485001
Pyramid adapter - lifting LH	D924008000
Pyramid adapter - lifting RH	D924008001
Safety stay	-
Control equipment - main landing gear parallelism	E920145000
Plumb-line	D921621000
Ten metre (32.8 ft) steel measuring tape (accuracy: 0.039 in (1 mm))	-
Torque wrench: 110 lbf (50 daN)	-

R

B NOTE: To facilitate this task on the fleet it will also be
B necessary to provide a selection of washers (shims)
B (Ref. Pt. Nos. 740355/740356/740357 to enable further
B adjustment should it prove necessary.

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

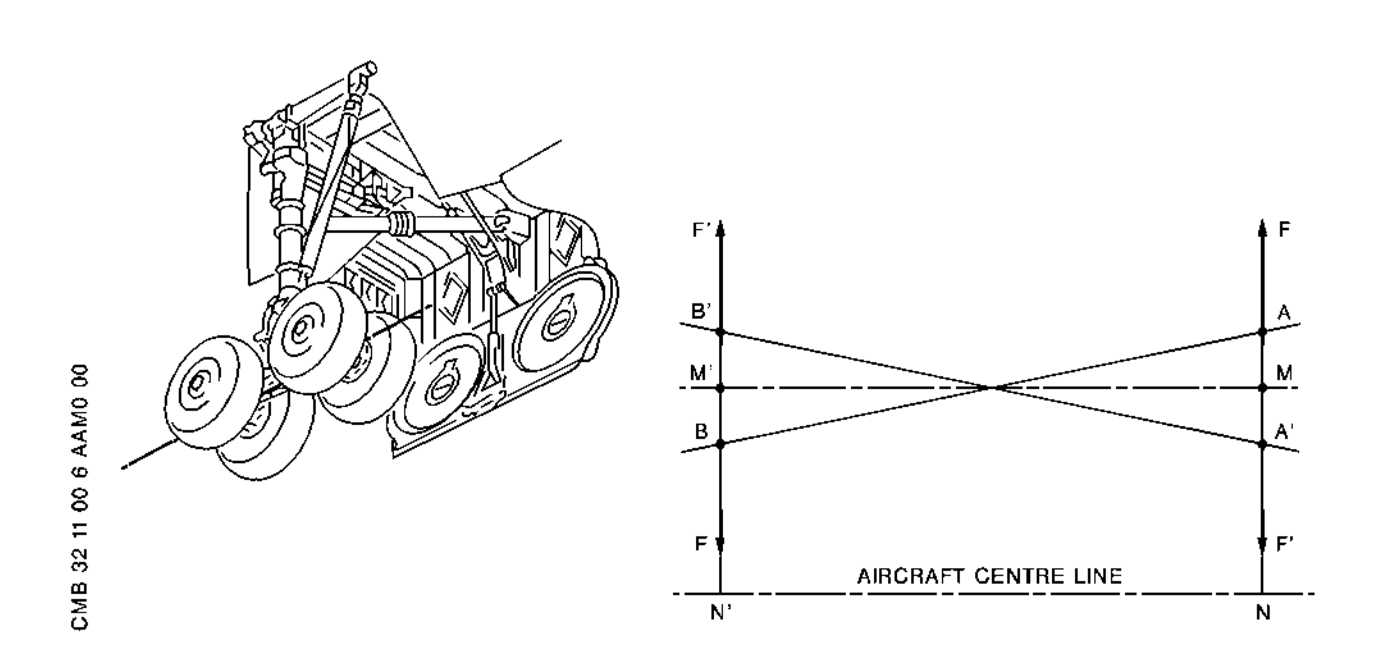
(4) Jack up the aircraft (Ref. 07-11-00).

(5) Install safety stay.

(6) Under the fuselage, install plumb-line D921621000 at point U then C and draw aircraft centre line on ground.

(7) Position tool D92014500 on each debogging fitting at end of bogie beam.

C. Check Alignment of Main Wheels (Ref. Fig.601)



Main Wheel Alignment Check
Figure 601

(1) Apply a load of 110 ±11 lbf (50 ±5 daN) on F at end of bogie beam to compensate clearance of torque links.

(2) Using a plumb line fitted to tool D920145000, draw projection of point A on ground.

(3) Apply same load in opposite direction on F' and draw projection of point A' on ground.

(4) Draw point M, in middle of AA'.

(5) At other end of bogie beam, repeat same operations to determine point M' in middle of BB'.

(6) The result is a theoretical axis MM' which represents the centre line of a bogie beam without clearance. This centre line must be parallel to aircraft centre line with a tolerance of ± 0.078 in (±2 mm).

NOTE: Distances MN and M'N' are measured as accurately as possible. Misalignment is accepted if MN-M'N' is within tolerance of ±0.078 in (±2 mm).

B D. Simplified MLG Wheel Alignment Check (Ref. Fig.602)

B (1) Position tool E920145000 (HBTE 0020) with plumb line
B attached to each debogging fitting at end of bogie beam,
B ensure they are fully screwed up.

B (2) Mark centre of each plumb line on floor and using a steel
B tape note the following dimensions. MLG wheel alignment is
B considered satisfactory provided dimensions 'X' and 'Y' are
B within 0.157 in (4 mm) of each other and dimensions 'A' and
B 'B' are within 0.197 in (5 mm) of each other.

E. Check Fits and Clearances of Torque Links (Ref. Fig.601)

(1) Apply a load of 110 ±11 lbf (50 ±5 daN) on F to compensate clearance of torque links.

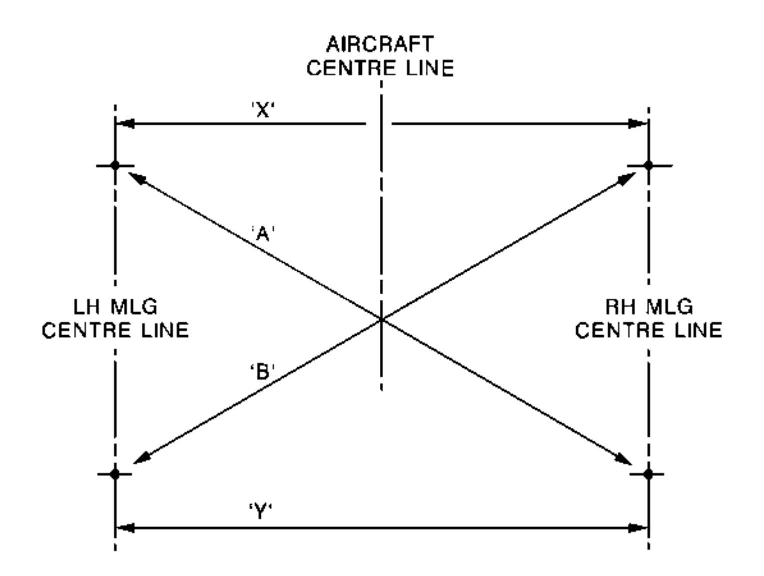
(2) Using a plumb line fitted to tool D920145000 draw projection of point A on ground.

(3) Apply same load in opposite direction on F' and draw projection of point A' on ground.

(4) At other end of bogie beam, repeat same operations to determine points B and B'.

(5) Measure displacement AA' and BB' projected on ground.





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Simplified Main Wheel Alignment Check
Figure 602

(6) Each displacement AA' or BB' must not be greater than 0.236 in (6mm)

F. Close-Up

(1) Remove plumb-line D921621000.

R (2) Remove tools E920145000.

(3) Check that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft on its wheels.

4. Check of Spherical Bearings Following a Hard Landing

A. Equipment and Materials

DESCRIPTION	PART NO.
Clinometer	-
Rule (maximum thickness: 0.393 in (10 mm)	-
Access platform: 11 ft 5 in (3.48 m)	-
Wheel chocks	-

B. Prepare (Ref. Fig.603)

(1) Position wheel chocks.

(2) Open main landing gear doors (Ref. 32-00-00, Servicing).

(3) Remove access doors 572 AB and 672 AB.

(4) Remove screws (2) from the two diametrically opposed lock plates (1) on the forward spherical bearings and remove lock plates (1) (Detail A).

(5) Retain lock plates (1) and screws (2) for reinstallation.

(6) Position rule horizontally in guide of one of the two central seat tracks between FR54 and FR60 and position clinometer on rule.

NOTE: Make certain that rule positively contacts bottom of seat guide over full length of rule.

C. Check of Main Gear Forward Spherical Bearings

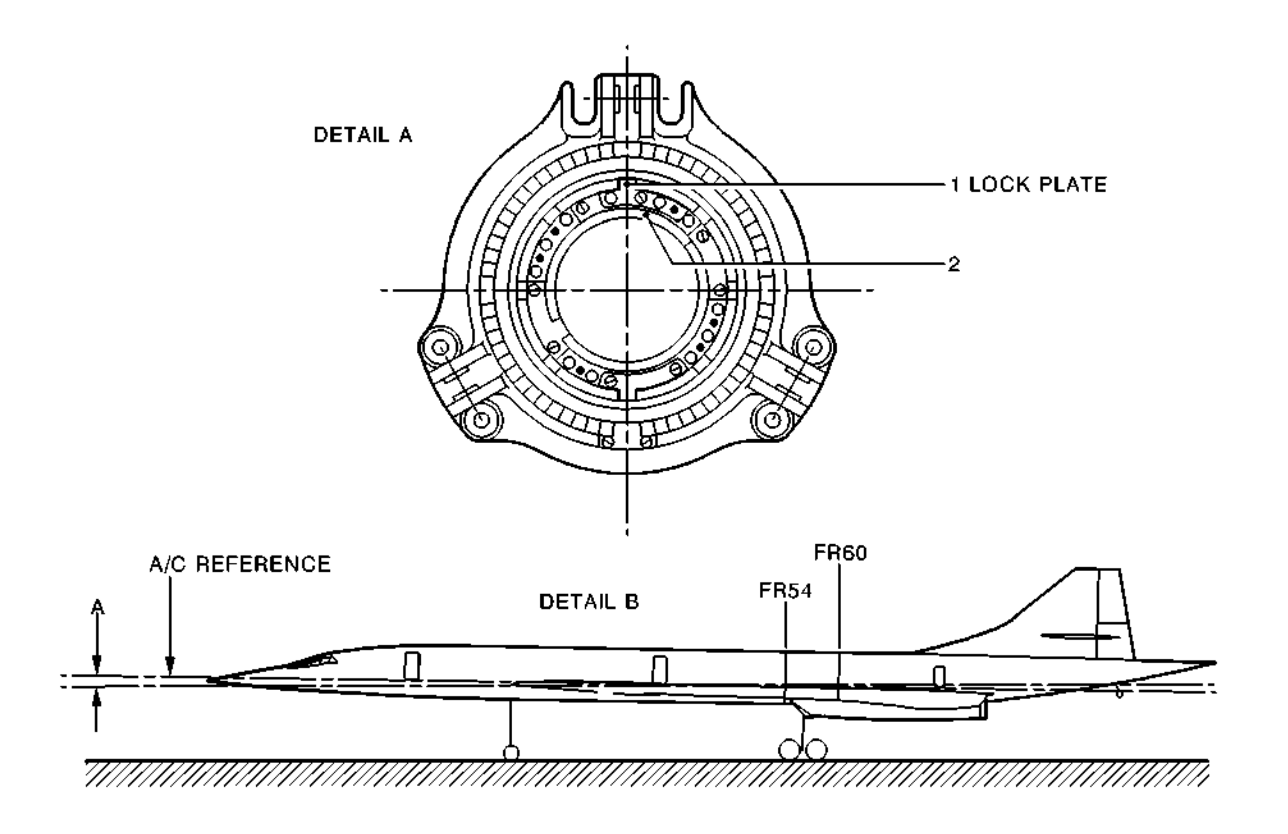
(1) Using clinometer positioned on rule, accurately measure angle A of aircraft reference (Detail B).

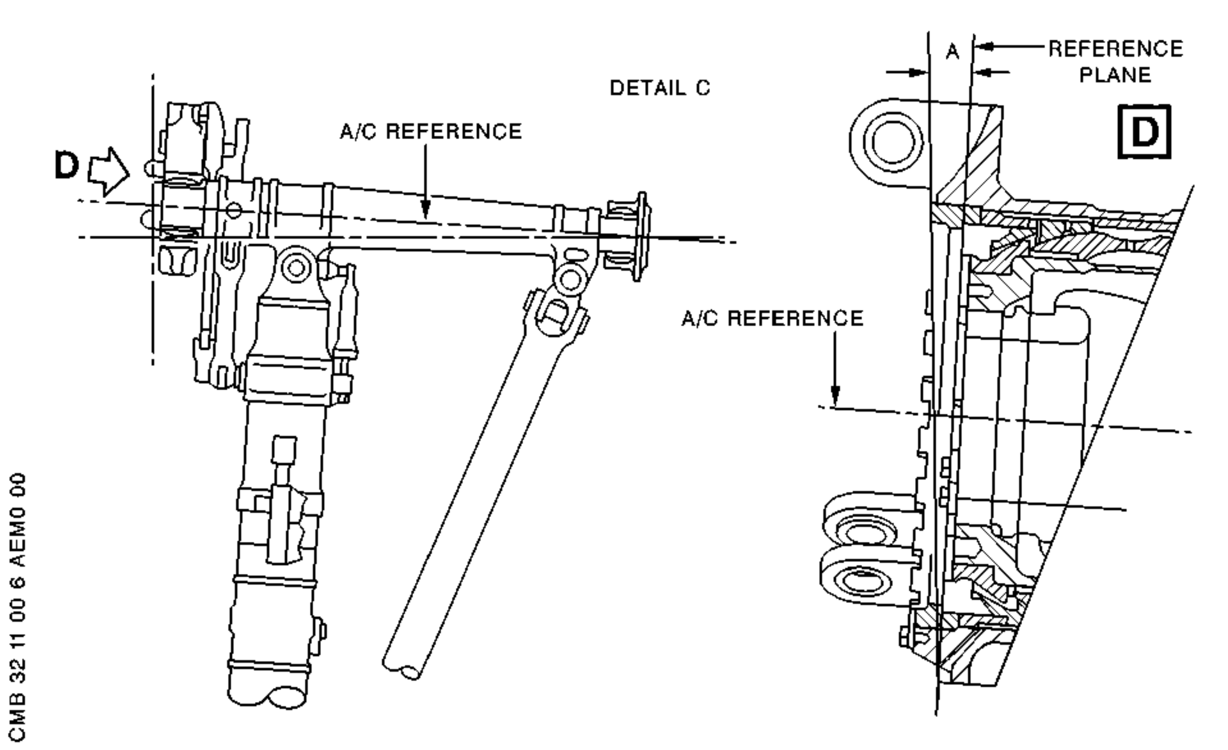
NOTE: Make certain that aircraft remains motionless.

(2) Note the value of angle A.

(3) Position clinometer against forward spherical bearing seal retainer (3) and measure angle A' on bearing front face (Detail C).

(4) Note the value of angle A'.





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Check of Spherical Bearing Following
a Hard Landing
Figure 603

(5) Check that the value of the residual angle A - A is less than or equal to 45'.

NOTE: In the event that the value of this angle is greater than the permissible value, both main landing gear legs, as well as the spherical bearings, must be removed and returned to the workshop for overhaul.

D. Close-Up

(1) On front face of forward spherical bearings, install lock plate (1) with screws (2).

(2) Install access doors 572 AB and 672 AB.

(3) Remove rule from seat track.

(4) Close main landing gear doors (Ref. 32-00-00, Servicing).

(5) Remove access platform.

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B 5. Check of Main Landing Gear Lower Bearing Assembly Clearances

B A. The maximum allowable in-service clearance between the main
B landing gear barrel and the sliding tube is 0.0367 in (0.931 mm).
B This is the sum of the maximum allowable clearances in the three
B elements of the lower bearing assembly as follows:

B (1) Between barrel I/D and bearing housing O/D - 0.0040 in
B (0.101 mm).

B (2) Between bearing housing I/D and bush O/D (spherical
B diameter) - 0.0031 in (0.080 mm).

B (3) Between bush I/D and sliding tube - 0.0295 in (0.750 mm).

RB 6. Damage to MLG Retraction Jack Lower Eye End Grease Seals

RB A. If the MLG retraction jack lower eye end forward or aft grease
RB seals are found to be damaged or missing, it is acceptable to
RB continue in service provided the following actions are taken:

RB (1) Raise carry forward action to replace the seal at the next
RB maintenance input where the aircraft is jacked, i.e. MLG
RB lubrication or Inter Check.

RB NOTE: Workshop support will need to be arranged for the
RB replacement of the seal(s).

RB (2) Raise carry forward action to grease the affected joint every 30 hours until the seal is replaced (Ref. 12-22-31, Fig.5, Item 71).

FRONT AND REAR SPHERICAL BEARINGS - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main landing gear crossbeam is hinged onto a front and rear spherical bearing.
A nut in the front spherical bearing prevents end play of the crossbeam.

2. Bearing-Front Spherical

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack-lifting capability greater than 81600 daN (183621 lbf)	07-10-0001
Safety jack adapter	D920113200
Jacking pad - nose	D925370000
Balancing device - pyramid adapter LH	D921485000
Balancing device - pyramid adapter RH	D921485001
Pyramid adapter - lifting LH	D924008000

DESCRIPTION	PART NO.
Pyramid adapter - lifting RH	D924008001
Safety stay	-
Electrical ground power unit	-
Beam assy - main landing gear - Removal/Installation	D930700000
Wrench - open end	151000/78
Extractor	249800/78
Guide assembly	249900/78
Wrench-claw	248100/78
Fixture - extraction and positioning	248200/78
Extractor	248300/78
Guide assembly	248400/78
Safety collars - main landing gear door actuating cylinder	D921317000
Safety sleeve - nose landing gear doors	E925002000
Access platform 3.220 m (10 ft 7 in)	-
Safety barrier	-
Circuit breaker safety clips	-
Lockwire dia. 1 mm (0.041 in) (corrosion resistant steel)	-
Lockwire dia. 0.8 mm (0.032 in) (corrosion resistant steel)	-

**ON A/C ALL

DESCRIPTION	PART NO.
Standard grease (Ref. 20-30-00, No.051)	-
Standard grease (Ref. 20-30-00, No.058)	-

DESCRIPTION	PART NO.
Sealant (Ref. 20-30-00, No.351)	-
Sealant (Ref. 20-30-00, No.363)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Position safety barriers.

(6) Check that visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(8) Remove landing gear and shortening mechanism safety devices.

WARNING: CHECK THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position and then in NEUTRAL position as soon as strut is unlocked.

(11) Place main and nose landing gear door operating handles in open position. Handles locked, indicator plate showing red.

(12) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Install safety collars on landing gear door jacks.

(14) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(15) Display a warning notice in flight compartment.

(16) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(17) Remove panel 572 AT or 672 AT.

(18) Remove doors 572 BB then 572 AB or 672 BB then 672 AB.

(19) Remove secondary door of landing gear concerned (Ref. 32-12-12, Removal/Installation).

(20) Install lifting fittings on crossbeam/leg pin and strut/crossbeam pin.

(21) Install tool D930700000 on top wing surface.

(22) Take weight of landing gear off spherical bearings by means of beam assembly hoist.

C. Remove
R (Ref. Fig.401, 402 and 403)

(1) Disconnect outer shortening rod.

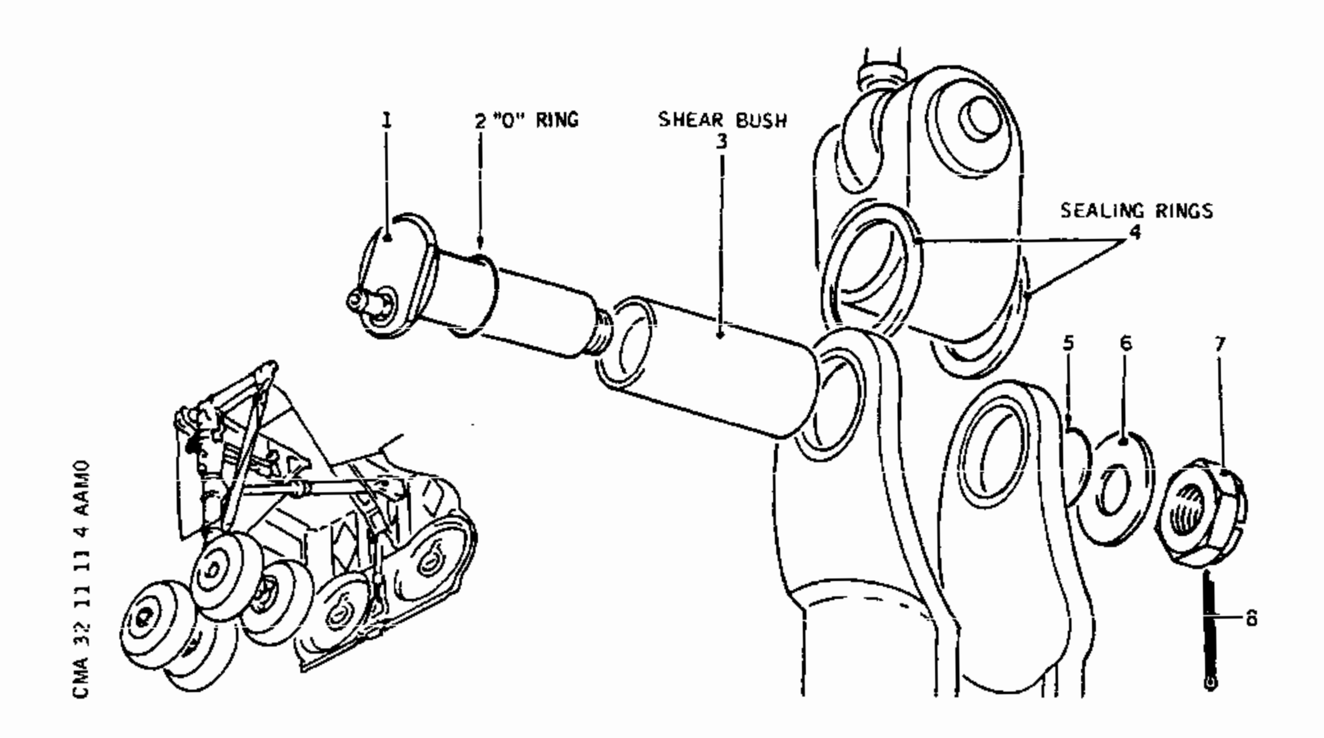
(a) Remove cotter pin (8).

(b) Hold inner pin (1) with wrench 151000/78.

(c) Remove nut (7). Remove washer (6) and retain for reinstallation.

(d) Adjust angular position of landing gear to cancel effect of spring rod on shortening rod.

NOTE: This position is between 1 degree 30 and 2 degrees 30 from "landing gear down-locked" position.



Landing Gear Leg - Shortening Rod Lower Connection
Figure 401

(e) Remove inner pin (1).

(f) Remove shear bush (3) using tool 249800/78.

(g) Retain sealing rings (4) for reinstallation.

(h) Discard O-rings (2) and (5).

(2) Cut lockwire and remove lock plate (22) attachment screws (21).

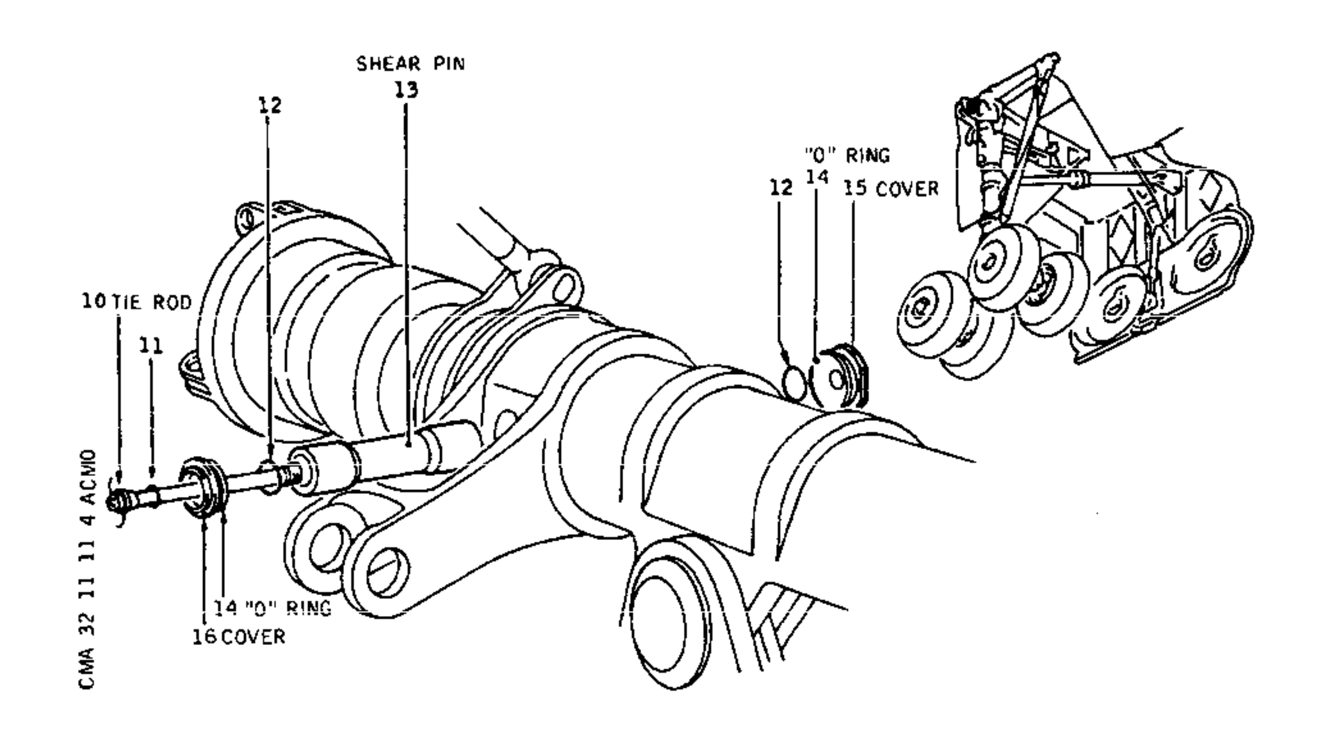
(3) Remove lock plates (22).

(4) Remove sealant.

(5) Loosen nut (24) using tool 248100/78.

<u>CAUTION</u> : NUT (24) IS TO BE UNLOCKED BY TURNING IN CLOCKWISE DIRECTION.

(6) Remove shear pin (13).



Front Trunnion Shear Pin
Figure 402

(a) Cut lockwire and remove tie-rod (10).

(b) Remove covers (15) and (16).

(c) Withdraw shear pin (13) using tool 248300/78.

(d) Discard "O" rings (11), (12) and (14).

(7) Fully unscrew nut (24) using tool 248100/78.

(8) Install tool 248200/78.

(9) Push trunnion (23) back using tool.

(10) Remove extraction tool.

(11) Remove X-wise brace rods (20).

(a) Remove cotter pin (30).

(b) Remove nuts (29).

(c) Remove bolt (25).

(d) Retain washers (26) and (28) for reinstallation.

(e) Remove spacer (27).

(f) Remove rods (20).

(12) Remove front spherical bearing:

**ON A/C 001-002,

(Ref. Fig. 403)

After SB 32-039 For A/C 001-002

(Ref. Fig. 404)

(a) Remove nuts (37).

(b) Discard pre-load washers (36).

(c) Retain washers (38) from two upper connections for reinstallation.

**ON A/C 001-002

(d) Remove lubricators located at end of spherical bearing on landing gear side.

After SB 32-039 For A/C 001-002

(d) Not applicable.

(e) Withdraw spherical bearing assembly.

(f) Remove and retain distance piece (31) for reinstallation.

NOTE: Check that sleeve (32) remains in position.

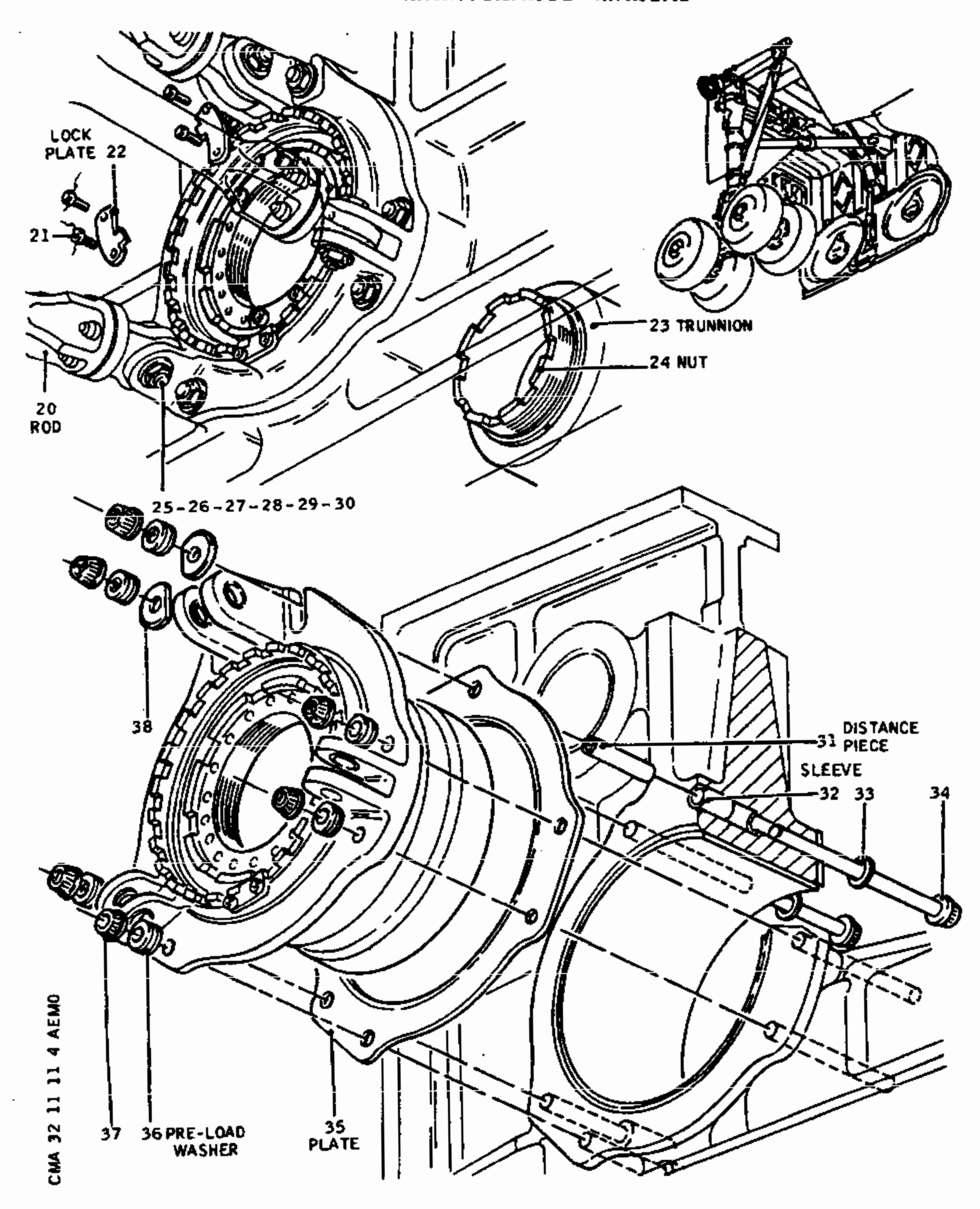
(g) Remove plate (35).

(h) Check that bolts (34) and washers (33) remain in position.

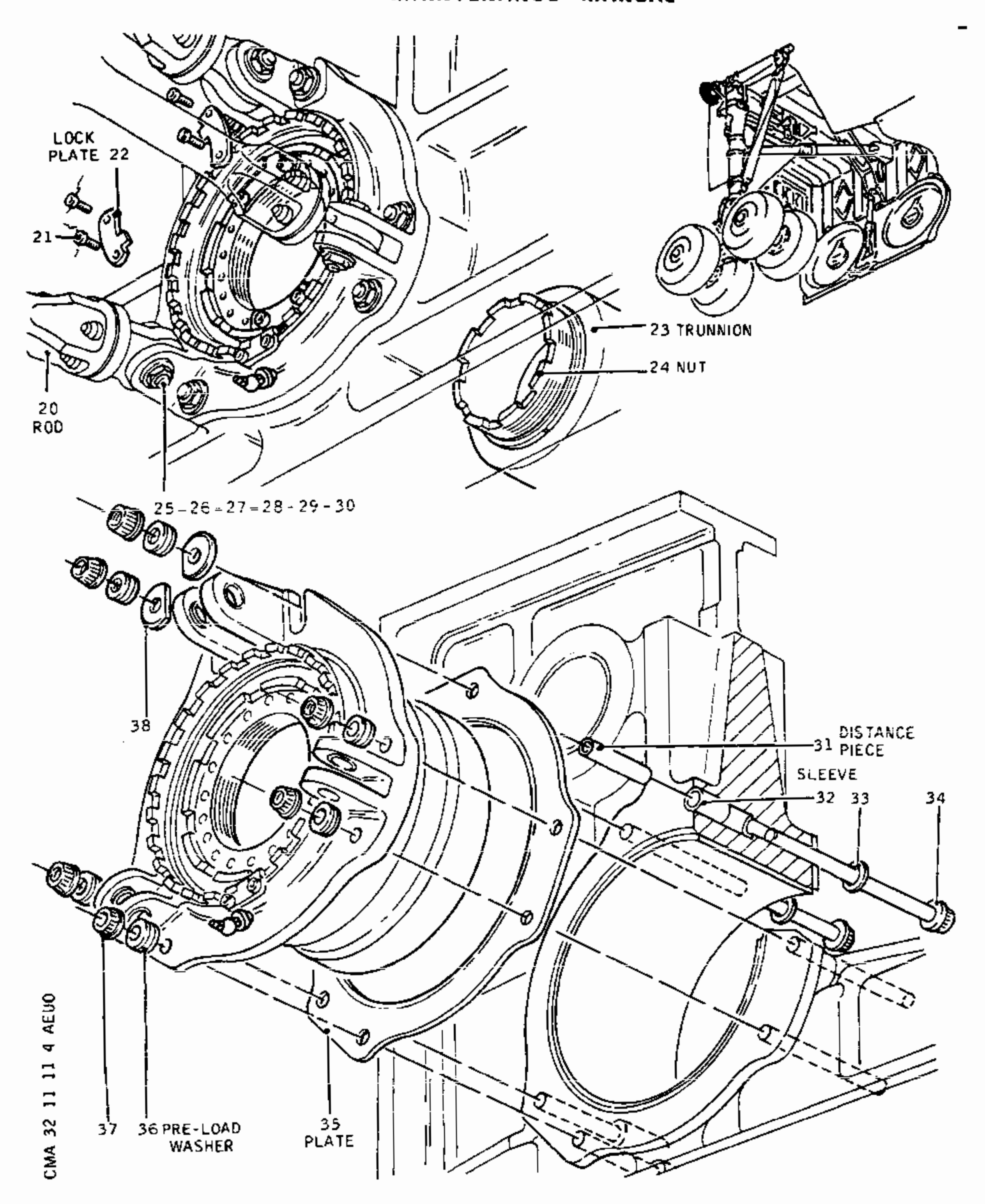
R (i) Remove spherical bearing from its housing and
R inspect the housing for corrosion. Report any
R signs of corrosion to the relevant Quality
R Control Authority.

D. Preparation of Replacement Component

(1) Coat machined surfaces of bearing with product No.058, then product No.051.



Front Spherical Bearing
R Figure 403



Front Spherical Bearing
Figure 404

**ON A/C 001-002,

(2) Remove lubricators located at end of bearing on landing gear side.

After SB 32-039 For A/C 001-002,

(2) Not applicable.

E. Install

NOTE : All seals from the various connecting components shall be replaced.

(1) Install front bearing on structure.

(a) Check that bolts (34) washers (33) and sleeve (32) are in position.

(b) Install plate (35).

(c) Install distance piece (31).

(d) Position and fully engage front bearing.

(e) Engage two washers (38) on upper connections.

(f) Insert preload washers (36).

(g) Install nuts (37) and tighten.

NOTE : Tighten nuts (37) until outer rings of pre-load washers (36) no longer rotate.

**ON A/C 001-002,

(h) Install lubricators at end of bearing on landing gear side.

After SB 32-039 For A/C 001-002,

(h) Not applicable.

(2) Attach pick-up rods

(a) Check that fork-fittings are equipped with their bushes.

(b) Position rods (20) on their fork fittings.

(c) Lubricate spacers (27) with product No.051 and install.

(d) Insert bolts (25) with their washers (26).

(e) Install washers (28).

(f) Install nuts (29) and tighten. Torque to between 2.6 and 3 m.daN (19.176 and 22.126 lbf.ft.).

(g) Insert and fold back cotter pins (30).

NOTE : If necessary, adjust length of rods (20) by means of shim between rod body and spherical bearing.

(3) Insert front trunnion into spherical bearing.

(a) Insert tool 248200/78 into bore of nut (24).

(b) Secure tool to inner ring of front spherical bearing by means of bolts.

(c) Insert, then fully push home, trunnion (23) into bearing.

(d) Tighten nut (24) using tool 248100/78.

CAUTION : DO NOT TORQUE TIGHTEN AT THIS STAGE.

(e) Visually align bores of trunnion (23) and cross-beam.

(f) Position tool 248400/78.

(g) Lubricate shear pin (13) with Product No.051.

(h) Install shear pin (13) on crossbeam. Install new "O" rings (12) at either end of shear pin (13).

(i) Install covers (15) and (16) with their respective new seals (14) at each end of shear pin (13).

NOTE : Turn outer cover to engage it in boss on crossbeam.

(j) Install tie rod (10) fitted with new seal (11). Torque to between 0.3 and 0.5 m.daN (26.552 and 44.253 lbf.in.).

(k) Safety tie rod to outer cover with lockwire dia. 1mm (0.041 in.) (Ref. 20-21-13).

(l) Seal tie rod flange with Product No.351.

(m) Tighten nut (24) with tool 248100/78 and torque wrench. Torque to between 40 and 50 m.daN (295.024 and 368.781 lbf.ft.).

(n) Install new lock plates (22).

(n1) Tighten lock plate attachment bolts (21). Torque to between 0.3 and 0.6 m.daN (26.552 and 53.104 lbf.in.).

(n2) Safety bolts (21) with lockwire dia. 0.8 mm (0.032 in.) (Ref. 20-21-13).

(4) Install outer shortening rod on landing gear leg.

(a) Install new "O" rings (2) and (5) on inner pin (1).

(b) Engage shortening rod link with sealing rings (4).

(c) Install shear bush (3) using tool 249900/78.

(d) Install inner pin (1) using tool 249900/78.

(e) Install washer (6).

(f) Hold pin (1) tighten nut (7).
Torque nut to between 2.5 and 3 m.daN (18.439 and 22.126 lbf.ft.).

(g) Install and fold back cotter pin (8).

(5) Remove tool D930700000.

(6) Lubricate bearing with Product No.051.

(7) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(8) Reinstall secondary door concerned (Ref. 32-12-12, Removal/Installation).

(9) Install panel 572AT or 672AT.

(10) Install doors 572BB then 572AB or 672BB, then 672AB.

If necessary touch up sealing with Product No.363.

(11) Remove safety clips and tags and reset circuit breakers

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Check that door operating handles on nose and LH main landing gear legs are locked in "doors open" position (indicator plates showing red).

(14) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

NOTE : The landing gear locks in DOWN position.

(15) With landing gear downlocked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(17) Remove safety collars.

(18) Remove access platform.

(19) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(20) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : CHECK THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(21) Close landing gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(22) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(23) Shut down and depressurize Green hydraulic system (29-11-00, Servicing).

(24) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(25) Install landing gear and shortening mechanism safety

devices.

(26) De-energize the aircraft electrical network and disconnect electrical ground power unit.

F. Test

Carry out a Normal landing gear retraction and extension (Ref. 32-31-00, Adjustment/Test).

G. Close-Up

(1) Close access doors.

(2) Remove safety barriers and check that area under aircraft is clear.

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

3. Bearing-Rear Spherical

A. Equipment and Materials

DESCRIPTION	PART NO.
- Jack-Lifting Capability greater than 81600 daN (183621 lbf)	07-10-0001
- Safety Jack Adapter	D920113200
- Jacking Pad-Nose	D925370000
- Balancing Device-Pyramid Adapter LH	D921485000
- Balancing Device-Pyramid Adapter RH	D921485001
- Pyramid Adapter-Lifting LH	D924008000
- Pyramid Adapter-Lifting RH	D924008001
- Safety Stay	
- Electrical Ground Power Unit	
- Beam Assy-Main Landing Gear-Removal/ Installation	D930700000
- Wrench-Open End	151000/78
- Extractor	249800/78
- Guide Assembly	249900/78
- Fixture-Extraction and Positioning	248500/78
- Extractor	248600/78
- Olive Assembly	248700/78
- Safety Collars-Main Landing Gear Door-Actuating Cylinder	D921317000
- Safety Sleeve - Nose Landing Gear Doors	E925002000
- Access Platform 3.220 m (10 ft 7 in.)	
- Safety Barriers	

DESCRIPTION	PART NO.
- Circuit Breaker Safety Clips	

**ON A/C ALL

- Standard Grease (Ref. 20-30-00, No.051)
- Standard Grease (Ref. 20-30-00, No.058)
- Sealant (Ref. 20-30-00, No.351)
- Sealant (Ref. 20-30-00 No.363)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Position safety barriers.

(6) Check that visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(8) Remove landing gear and shortening mechanism safety devices.

WARNING : CHECK THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position then in NEUTRAL position as soon as strut is unlocked.

(11) Place main and nose landing gear door operating handles in open position. Handles locked; indicator plates showing red.

(12) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Install safety collars on main landing gear door actuating jacks.

(14) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER		MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G	1	A 6
UC SELECTOR RAISE CONT		G	2	A 7
UC LOWER DOORS OPEN SUP		G	3	A 8
UC SELECTOR LOWER CONT		G	4	A 9

(15) Display a warning notice in flight compartment.

(16) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(17) Remove panel 572AT or 672AT.

(18) Remove doors 572CB or 672CB.

(19) Remove secondary door of landing gear concerned (Ref. 32-12-12, Removal/Installation).

(20) Position lifting fittings in crossbeam/leg pins and crossbeam strut pins.

(21) Install equipment D930700000 on top wing surface.

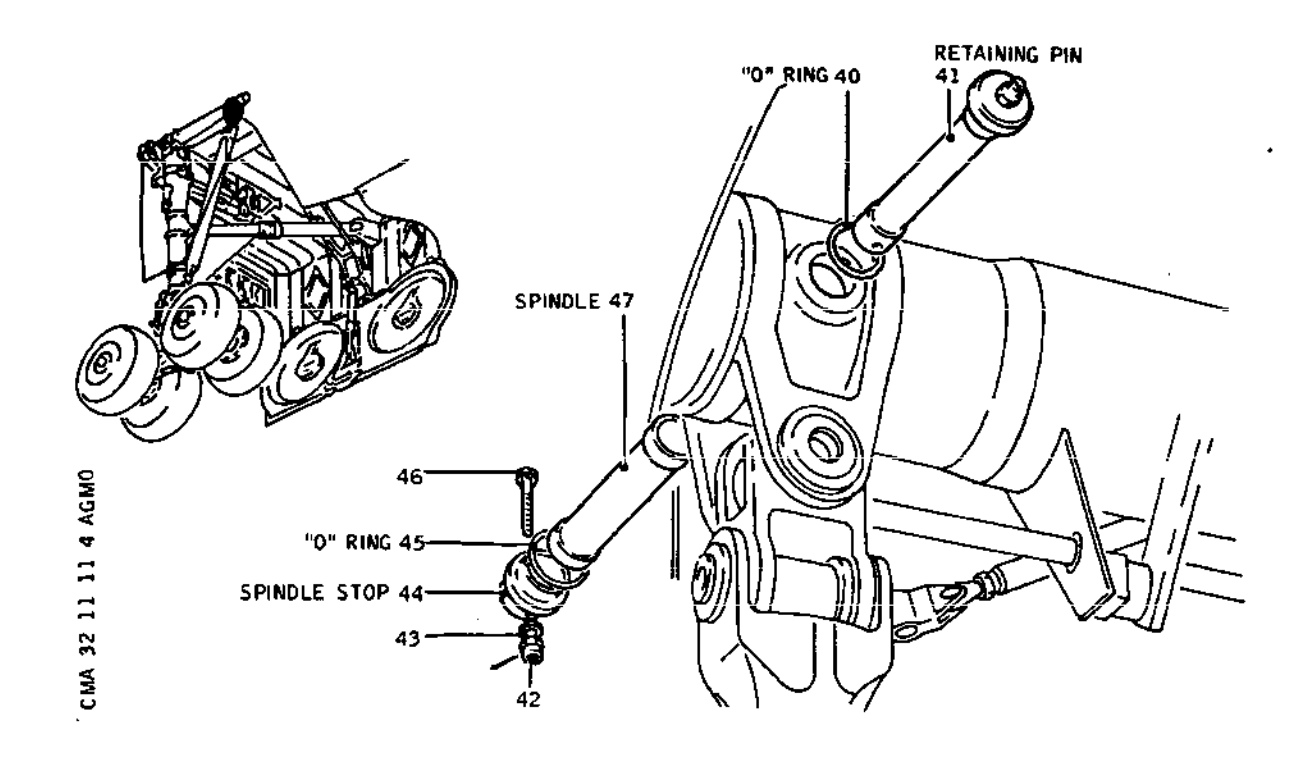
(22) Take weight of landing gear off spherical bearings by means of hoist.

C. Remove
(Ref. Fig. 401, 405 and 406)

(1) Disconnect outer shortening rod.

(a) Remove cotter pin (8).

(b) Hold inner pin (1) with tool 15100/78.



Rear Trunnion Spindle
Figure 405

(c) Remove nut (7). Remove and retain washer (6) for reinstallation.

(d) Adjust angular position of landing gear to cancel effect of spring rod on shortening rod.

NOTE : This position is between 1 degree 30 and 2 degrees 30 from "landing gear down-locked" position.

(e) Remove inner pin (1).

(f) Withdraw shear bush (3) using tool 249800/78.

(g) Retain sealing rings (4) for reinstallation.

(h) Discard "O" rings (2) and (5).

(2) Remove rear trunnion spindle

(a) Remove cotter pin, unscrew nut (42) and retain washer (43).

(b) Remove bolt (46).

(c) Remove sealant (product No.351).

(d) Remove spindle stop (44).

(e) Remove retaining pin (41).

(f) Withdraw spindle (47) using tool 248600/78.

(g) Discard 'O' rings (45) and (40).

(3) Remove rear spherical bearing:

(a) Position tool 248500/78.

(b) Push trunnion (50) backwards, using tool.

(c) Remove tool.

(d) Remove nuts (58).

(e) Discard preload washers (59).

(f) Retain washer (55) from upper connection for reinstallation.

(g) Remove bearing assembly.

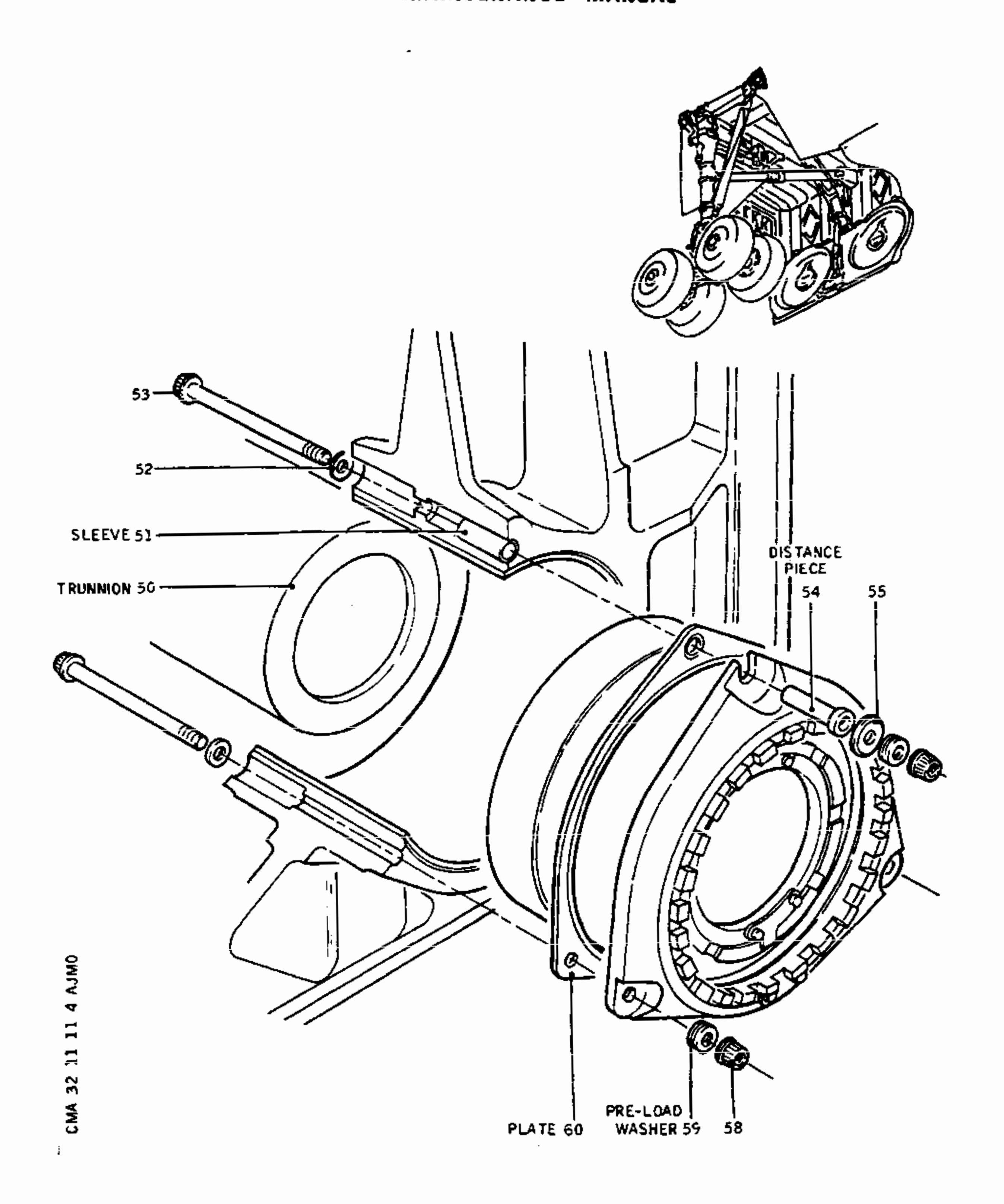
(h) Withdraw and retain distance piece (54) for reinstallation.

NOTE: Check that sleeve (51) remains in position.

(j) Remove plate (60).

(k) Check that bolts (53) and washers (52) remain in position.

R (l) Remove spherical bearing from its housing and
R inspect the housing for corrosion. Report any
R signs of corrosion to the relevant Quality
R Control Authority.



Rear Spherical Bearing
Figure 406

D. Preparation of Replacement Component

Coat machined surfaces of bearing with Product No.058, then Product No.051.

E. Install

NOTE : All seals of the various connecting components must be changed.

(1) Install rear bearing on structure

(a) Check that bolts (53) washers (52) and sleeve (51) are in position.

(b) Line up and install plate (60).

(c) Line up and install distance piece (54).

(d) Offer up, locate and fully engage rear spherical bearing.

(e) Install washer (55) onto upper connection.

(f) Install preload washers (59).

(g) Install nuts (58) and tighten.

NOTE : Tighten nuts (58) until outer rings of preload washers (59) no longer rotate.

(2) Install rear trunnion in spherical bearing :

(a) Insert tool 248500/78.

(b) Fully insert rear trunnion (50) into spherical bearing.

(c) Visually line up trunnion (50) and crossbeam rigging holes.

(d) Position tool 248700/78.

(e) Coat spindle with Product No.051.

(f) Insert spindle (47) using guide.

(g) Insert retaining pin (41) with a new 'O' ring (40).

(h) Install spindle stop (44) equipped with a new '0' ring (45).

(i) Insert pin (46) into spindle stop bore.

(j) Position washer (43). Screw on and tighten nut (42).
Torque to between 0.4 and 0.6 m.daN (35.403 and 53.104 lbf.in.).

(k) Install and fold back cotter pin.

(l) Seal around head of retaining pin (41) and inner and outer edges of stop (44) with Product No.351.

(3) Install outer shortening rod.

(a) Install new "0" rings (2) and (5) on inner pin (1).

(b) Install shortening rod link with sealing rings (4).

(c) Install shear bush (3) using tool 249900/78.

(d) Insert inner pin (1) using tool 249900/78.

(e) Install washer (6).

(f) Hold pin (1) screw on nut (7).
Torque to between 2.5 and 3 m.daN (18.439 and 22.126 lbf.ft.).

(g) Install and fold back cotter-pin (8).

(4) Remove tool D930700000.

(5) Lubricate bearing with Product No.051.

(6) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(7) Install secondary door concerned (Ref. 32-12-12, Removal/Installation).

(8) Install panel 572AT or 672AT.

(9) Install doors 572CB or 672CB. If necessary, touch up sealing with Product No.363.

(10) Remove safety clips and tags and reset circuit breakers.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Check that door operating handles on nose and LH main landing gear legs are locked in "doors open" position (indicator plates showing red).

(13) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

NOTE : The landing gear locks in down position.

(14) With landing gear downlocked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Remove safety collars.

(17) Remove access platform.

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : CHECK THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(20) Close doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(21) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(22) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(23) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(24) Install landing gear and shortening mechanism safety devices.

(25) De-energize the aircraft electrical network and disconnect electrical ground power unit.

F. Test

Carry out a Normal landing gear retraction and extension (Ref. 32-31-00, Servicing).

G. Close-Up

(1) Close access doors.

(2) Remove safety barriers and check that area under the aircraft is clear.

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

DEFLECTOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The deflector mounted in front of the main landing gear wheels prevents ingestion of water into the engines during ground roll.

2. Deflector

A. Equipment and Materials

DESCRIPTION	PART NO.
General Lubricants (Ref. 20-30-00, No. 051)	
**ON A/C ALL	
B C Wrench - Main Gear Front B Deflector Nut	E930058000 or 2-32-1526-1BA
**ON A/C ALL	
Protection and Paint (Ref. 20-30-00, No. 681)	

B. Prepare

Not applicable

**ON A/C 001-002,

C. Remove (Ref. Fig. 401)

After SB 32-004 For A/C 001-002,

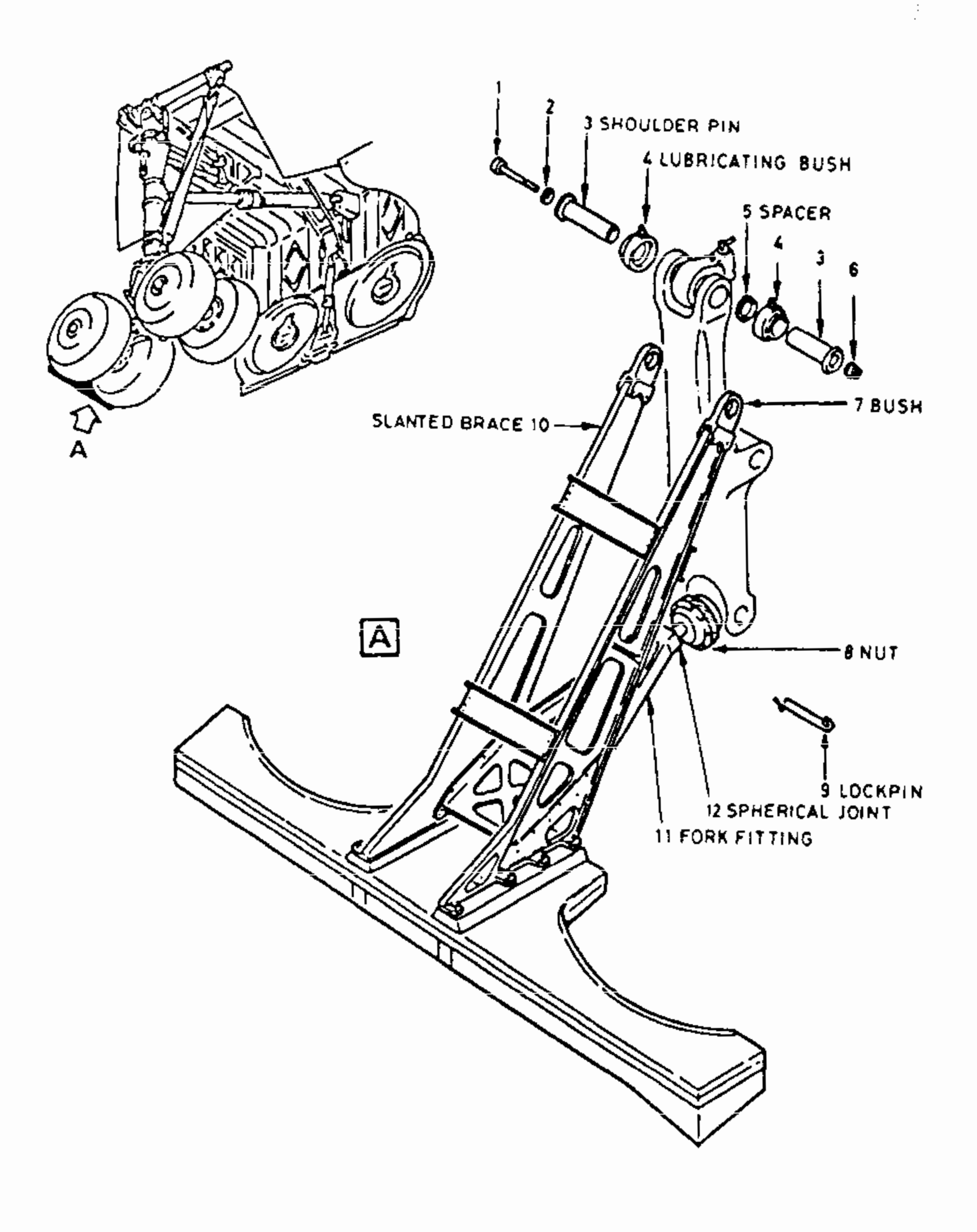
C. Remove (Ref. Fig. 402)

(1) Remove lockpin (9)

(2) Loosen nut (8) using wrench E930058000.

(3) Disconnect deflector from pitch damper.

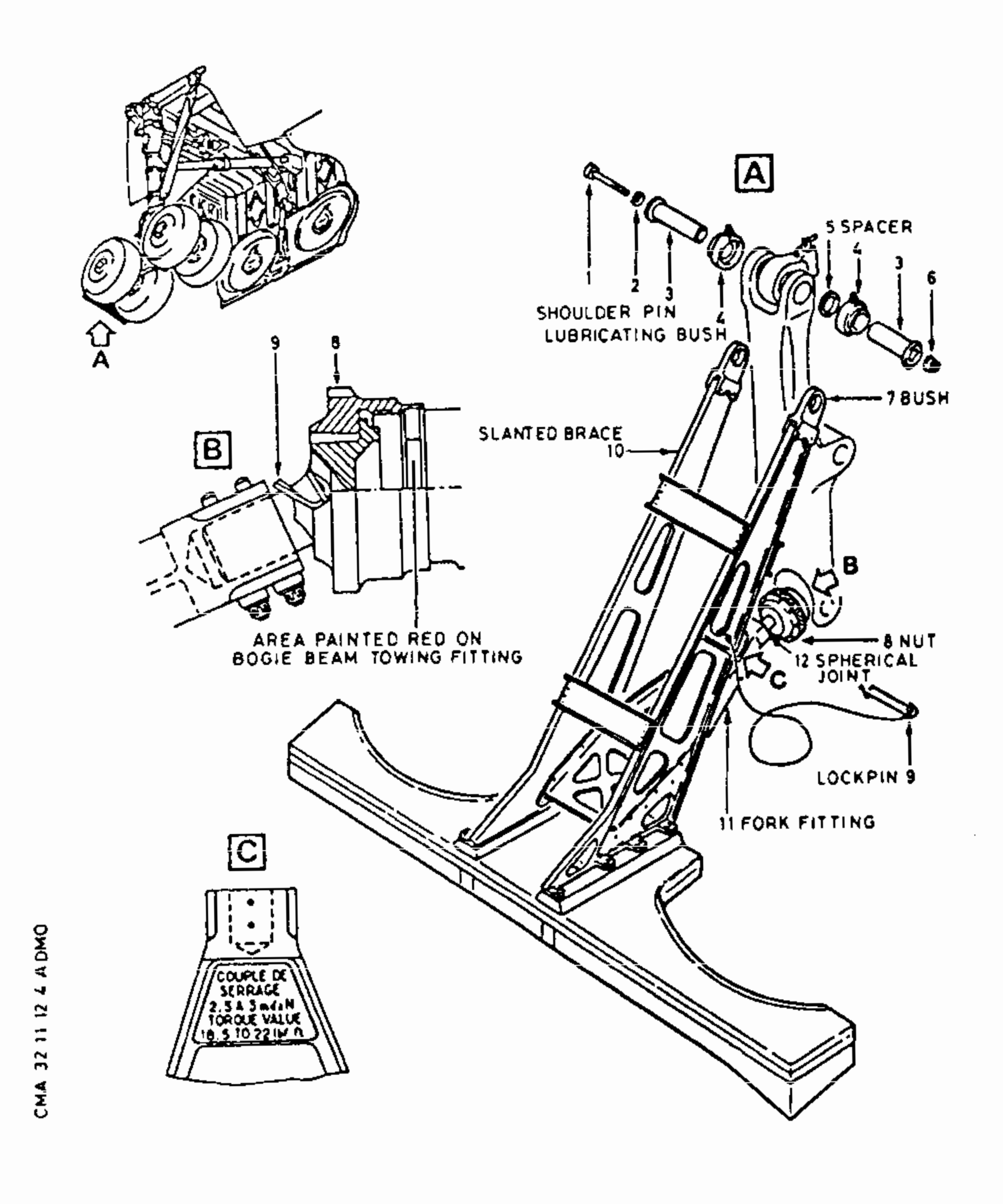
(a) Remove nut (6). Remove pin (1) with washer (2).



R

Front Deflector
Figure 401

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R

Front Deflector
Figure 402

(b) Remove two shoulder pins (3), retain spacer (5) for reinstallation.

(c) Disengage deflector and retain lubricating bushes (4) for reinstallation.

D. Preparation of Replacement Component

R CAUTION: CHECK THAT THE DEFLECTOR IS FULLY ASSEMBLED, THE
R BOLTS ATTACHING THE FORK FITTING (11) TO THE
R SLANTED BRACES (10) AND THE TAPER PINS ATTACHING
R THE SPHERICAL JOINT (12) TO THE FORK FITTING (11)
R ARE CORRECTLY FITTED.

On main landing gear bogie beam towing fitting make certain that throat is painted red. If not paint throat with product No. 681.

E. Install

(1) Lightly coat pins with product No. 051 to facilitate installation.

(2) Install lubricating bushes (4).

(3) Offer up deflector and make certain that bushes (7) are in position on end-fitting.

(4) Install one shoulder pin (3), spacer (5) then other shoulder pin (3).

**ON A/C 001-002,

(5) Install pin (1) with washer (2) and nut (6). Torque to 2.5 mdaN (18.5 lbf ft).

After SB 32-004 For A/C 001-002,

(5) Install pin (1) with washer (2) and nut (6). Torque to 2.5 mdaN. (18.5 lbf ft).

(6) Screw on and tighten nut (8) using wrench E930058000. Torque to between 2.5 and 3 mdaN (18.5 and 22 lbf ft).

**ON A/C 001-002

(7) Not applicable.

After SB 32-004 For A/C 001-002,

(7) Make certain that nut (8) completely masks area painted red on bogie beam towing fitting.

(8) Install lockpin (9).

F. Tests

Not applicable.

G. Close-Up

Not applicable.

MAIN LANDING GEAR DEFLECTOR (CENTRE) - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The centre deflector prevents ingestion of water into the engines during ground roll. It also protects the hydraulic components mounted under the bogie beam.

2. Centre Deflector

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack with lifting capability greater than 81600 daN (183453 lbf)	07-10-0001
Safety jack adapter	D920113200
Jacking pad - nose	D925370000
Balancing device - pyramid adapter - LH	D921485000
Balancing device - pyramid adapter - RH	D921485001
Pyramid adapter - lifting, LH	D924008000
Pyramid adapter - lifting, RH	D924008001
Safety stay	-

B. Prepare

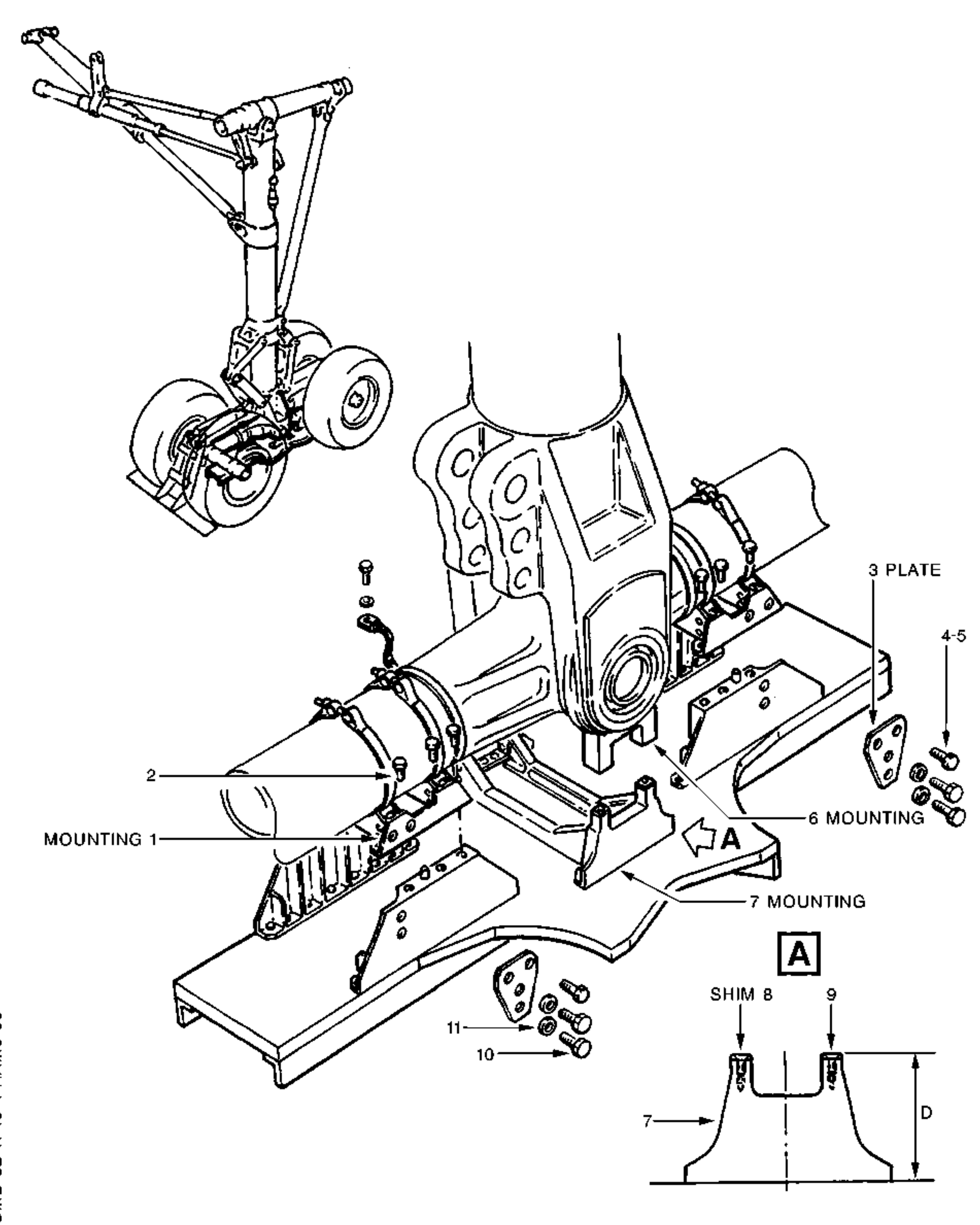
(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in Neutral position.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.



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R Centre Deflector
R Figure 401

(6) Remove the four wheels of landing gear concerned (Ref. 12-37-00)

R
R C. Remove (Ref. Fig.401)

(1) Disconnect deflector

(a) Disconnect bonding strip at mounting (1).

(b) Remove nuts (4) and bolts (5).

(c) Remove bolts (10) and washers (11).

(d) Retain plates (3) for reinstallation.

(e) Remove bolts (2).

(f) Remove deflector.

NOTE: Mountings (1) and (6) remain on bogie beam.

D. Preparation of Replacement Component

NOTE: RH and LH deflectors are not identical. RH deflector must be installed on RH gear, LH deflector on LH gear. Each deflector bears an identification plate.

R
R E. Install (Ref. Fig.401 and 402)

(1) Position deflector and attach with bolts (2). Do not tighten bolts (2) at this stage.

(2) Install plates (3) with washers (11) and bolts (10).

(3) Tighten bolts (10) and (2).

(4) With mountings (6) and (7) in contact, check that clearance between lower part of main gear shock absorber fork fitting and each of the two mountings (6) is 2 mm (0.078 in).

(5) Calculate required dimension D of each mounting (7) in order to achieve clearance of 2 mm (0.078 in).

B (6) If clearance is less than 2 mm (0.078 in).

(a) Remove deflector by removing bolts (2).

(b) Work bearing surfaces of mountings (7).

R (c) Install deflector with bolts (2).

R (d) Check clearances.

B (7) If clearance is greater than 2 mm (0.078 in).

(a) Remove deflector by removing bolts (2).

(b) Install shims (8) on mounting (7) with screws (9). Tighten screws (9).

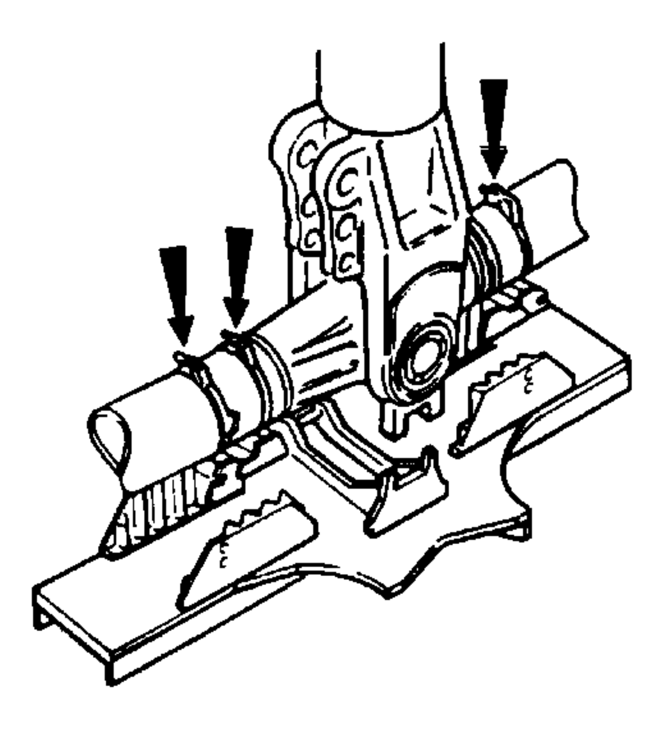
(c) Install deflector with bolts (2).

(d) Calculate required dimension D of each mounting (7) fitted with shims (8) in order to achieve clearance of 2 mm (0.078 in).

(e) If necessary:

- Remove deflector by removing bolts (2).
- Remove shims (8).
- Work bearing surfaces of mountings (7).
- Install shims (8) with screws (9). Tighten screws (9).
- Install deflector with bolts (2).
- Check clearances.

B
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B



RB Mounting Strap Clamp Installation
RB Figure 402

B (8) Secure plates (3) on mountings (1) with bolts (5) and nuts (4).

B (9) Tighten bolts (10) and (2).

B (10) Attach bonding strip to mounting (1).

B CAUTION: ENSURE THAT THE MOUNTING STRAP CLAMP ATTACHMENT
B THREADS ARE POSITIONED AT THE TOP OF THE TRUCK
B BEAM AS FAR AS PRACTICALLY POSSIBLE. THIS IS TO
B PROVIDE SUFFICIENT CLEARANCE SO THAT DAMAGE TO THE
B MLG TYRE SIDE WALLS DOES NOT OCCUR.

B (11) Check that the mounting strap clamp attachment threads are
B positioned at the top of the truck beam as far as
RB practically possible (Ref. Fig.402).

F. Adjustment/Test

Not applicable.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Install wheels (Ref. 12-37-00).

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

END OF THIS SECTION

NEXT

RH AND LH SHOCK ABSORBER - TROUBLE SHOOTING

WARNING: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General
(Ref. Fig.101 and 102)

The following information covers faults found in the two stage main shock absorbers and the action to be taken in the event of the various faults.
As the shock absorber comprises two separate chambers (an LP chamber and an HP chamber) and both chambers are compressed when the load on the shock absorber is greater than 60,000 daN (135,000 lb), the trouble shooting procedure is divided into two parts:

- Load on shock absorber less than 60,000 daN (135,000 lb).
- Load on shock absorber greater than 60,000 daN (135,000 lb).

For each of these configurations, the charts give the possible cause of the fault, the temporary repair scheme and corrective action, according to shock absorber compression dimension 'd'.

WARNING: NO TEMPORARY REPAIR SCHEME IS TO BE ADOPTED IF THE FAULTY SHOCK ABSORBER HAS AN EXCESSIVE PERMANENT LEAK.

NOTE: Where several schemes are proposed, the choice between these schemes is left to the discretion of the operator. The operator should however take into consideration the degree of shock absorber compression.

2. Main Shock Absorber Trouble Shooting

A. Equipment and Materials

DESCRIPTION	PART NO.
Air hydraulic test set	-
Supercharger (250 bar) (3600 psi)	-
Hydraulic fluid (Ref. 20-30-00, No.012)	-
Source of compressed nitrogen	-
Rule (500 mm)	-
Lockwire dia. 0.8 mm (0.032 in) (corrosion resistant steel)	-

DESCRIPTION	PART NO.
Leak detector fluid (Ref. 20-30-00, No.117)	-
Wrench - bushed end	167600/78
Set of concentric tube wrenches and extension tube	C47845

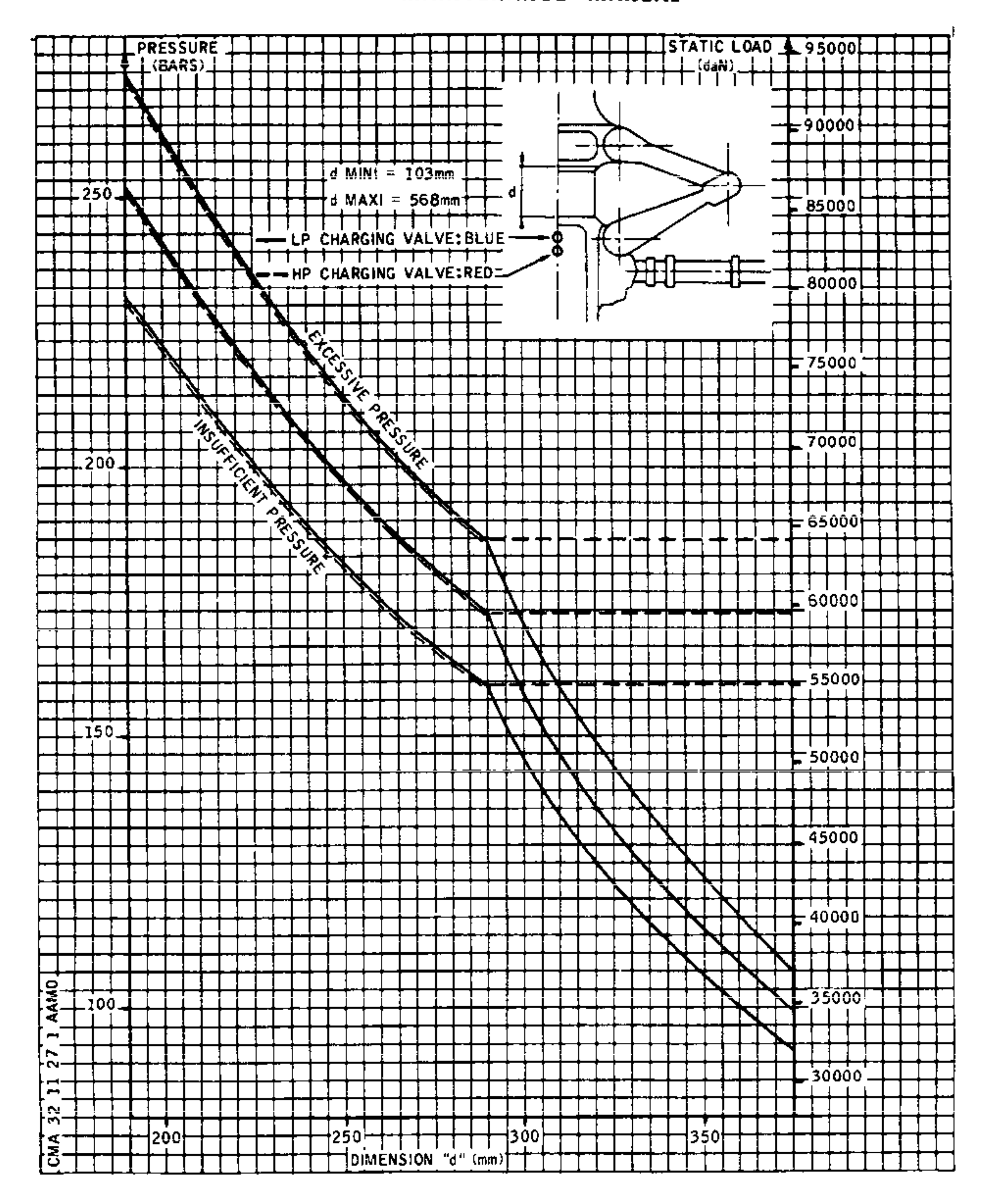
B. Prepare

(1) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

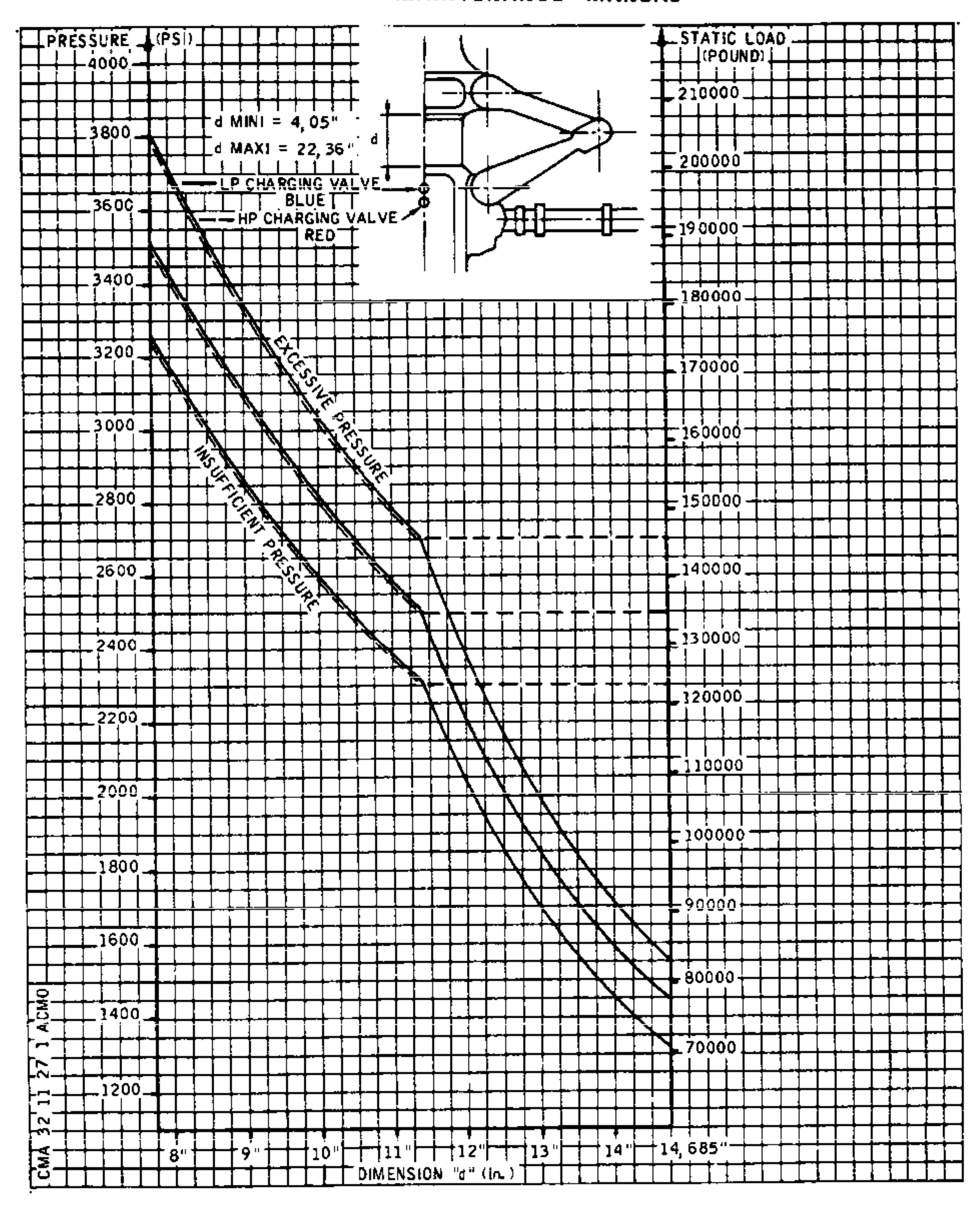
(2) Display a warning notice in the flight compartment.

(3) Remove side shroud inboard on LH leg, outboard on RH leg, to gain access to charging and filling valves.

- Upper valve (blue) : Low pressure chamber (LP)
- Lower valve (red) : High pressure chamber (HP)



Shock Absorber Compression Dimension 'd'
Figure 101



Shock Absorber Compression Dimension 'd'
Figure 102

C. Trouble Shooting

* Load on shock absorber less than 60000 daN (135,000 Lb). *

Dimension 'd' less than nominal value

Check HP chamber pressure : P = 173 bars (2510 psi) corrected for ambient temp.

NOT OK

PROBABLE CAUSES
- -HP valve
- -HP valve nipple
- -HP drain plug

CORRECTIVE ACTION (A/C on wheels)
- -Release HP pressure : chamber fully compressed (Ref Servicing)
- -Replace faulty part.
- -Top up HP chamber, charge to 173 bars (2510 psi) corrected for ambient temp. (Ref. Servicing).
- -Check dimension 'd'.

OK

PROBABLE CAUSES
- -Plunger tube bearing
- -Cylinder
- -LP valve
- -LP valve nipple.

TEMPORARY REPAIR SCHEME (A/C on its wheels)

SCHEME 1
- -Charge LP chamber to obtain correct dimension 'd'. (Ref. Servicing).

SCHEME 2
- -Temporarily recondition shock absorber (Ref. Servicing).

Dimension 'd' greater than nominal value

Check HP and LP chamber pressure

Intercommunication : HP = LP.

PROBABLE CAUSES
- -Separator piston.

TEMPORARY REPAIR SCHEME (A/C on its wheels).

SCHEME 1.
- -Leave shock absorber as such for return to base.

SCHEME 2.
- -Charge HP chamber to 173 bars (2510 psi) corrected for ambient temp. (Ref. Servicing)
- -Reduce LP chamber pressure to obtain correct dimension 'd'.

CORRECTIVE ACTION
- -Remove shock absorber.

```
****************************************************************
* Load on shock absorber greater than 60000 daN (135,000 lb).*
*          HP chamber pressure = LP chamber pressure.          *
****************************************************************
                              ||
                   ---------------------------
                   |       DIMENSION 'd'      |
                   | 'd' = 103 mm (4.055 in.)|
                   ===========================
                              |
                 -------------------------------
                 |   HP CHAMBER PRESSURE = 0   |
                 | HP chamber fully compressed |
                 -------------------------------
                              |
                              |
                      -------------------
                      | PROBABLE CAUSES |
                      | -HP valve       |
                      | -HP valve nipple|
                      | -HP drain plug. |
                      -------------------
                              |
                              |
          ----------------------------------------------
          | TEMPORARY REPAIR SCHEME (A/C on its wheels)|
          |                                            |
          | SCHEME 1                                   |
          | -Charge LP chamber to obtain correct       |
          |  dimension 'd' (Ref. Servicing).           |
          | SCHEME 2                                   |
          | -Temporarily recondition shock absorber    |
          |  (Ref. Servicing).                         |
          ----------------------------------------------
                              |
                              |
             ----------------------------------------
             | CORRECTIVE ACTION (A/C on its wheels)|
             |                                      |
             |  -Replace faulty part.               |
             |  -Top up HP chamber (Ref. Servicing) |
             |  -Charge HP chamber to obtain correct|
             |   dimension 'd' (Ref. Servicing).    |
             ----------------------------------------
```

D. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain in particular that no trace of hydraulic fluid remains.

(2) Install side shroud.

(3) Remove warning notice.

RH AND LH SHOCK ABSORBER - SERVICING

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main shock absorber is of the oleo-pneumatic type.

The shock absorber must be filled with hydraulic fluid with the aircraft on jacks.

Topping up and nitrogen charging operations can be carried out with the aircraft on jacks or on its wheels.

2. Topping-Up and Charging of Two Stage Main Shock Absorber with the Aircraft on Jacks
(Ref. Fig.301 and 302)

A. Equipment and Materials

DESCRIPTION	PART NO.
Air Hydraulic Test Set	
Supercharger (180 bars) (2610 psi)	
Wrench - Bushed End	167600/78
Set of Concentric Tube Wrenches and Extension Tube	C47845
Hydraulic Fluid (Ref. 20-30-00, No.012)	
Container	
Source of Compressed Nitrogen	
Pressure Regulator	
Jack - Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid	D921485000

DESCRIPTION	PART NO.
Adapter, LH	
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	

B. Prepare

(1) Make certain that landing gear and shortening mechanism safety devices are in position.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment prohibiting operation of landing gear.

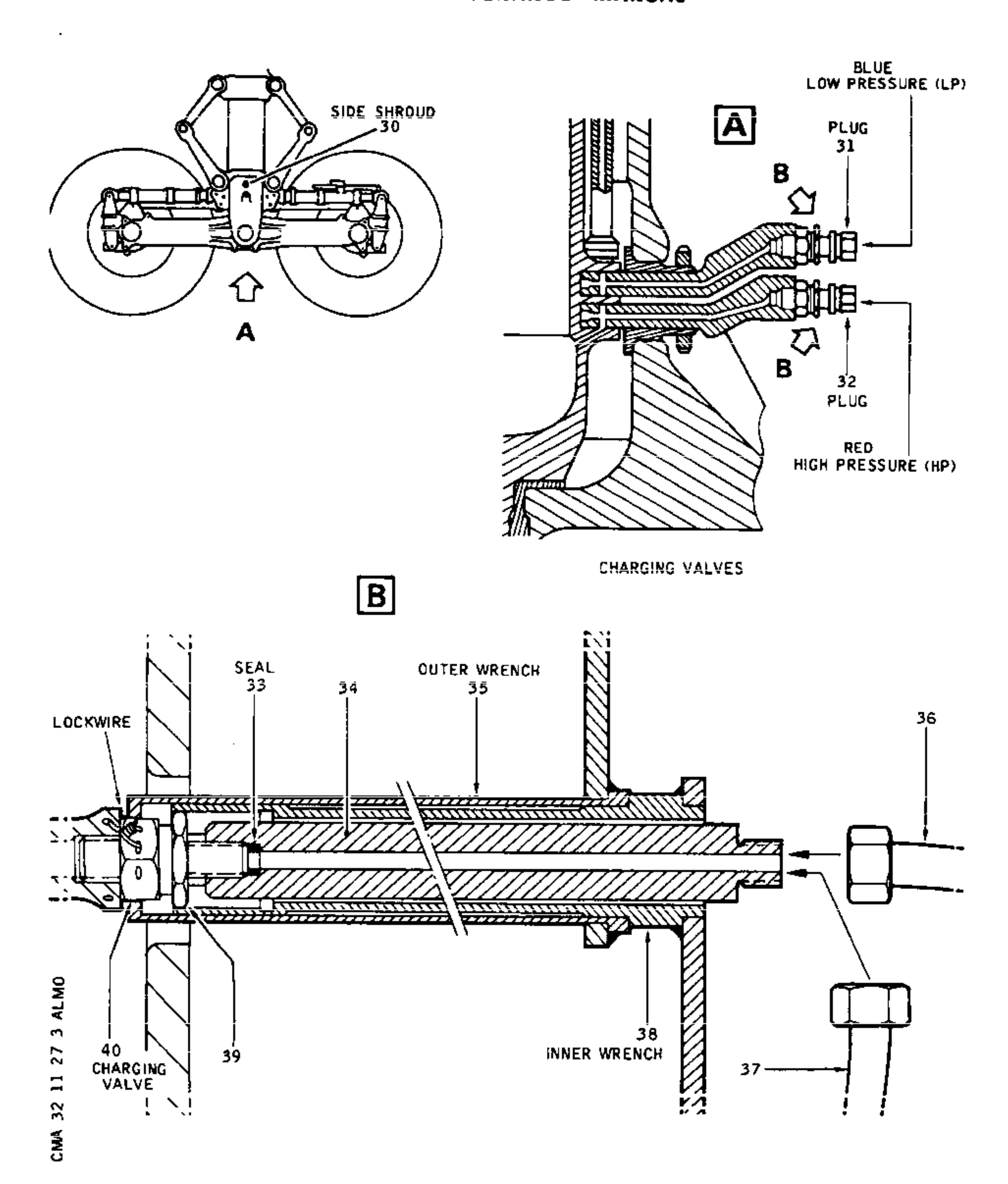
(4) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(5) Jack up aircraft (Ref. 07-11-00).

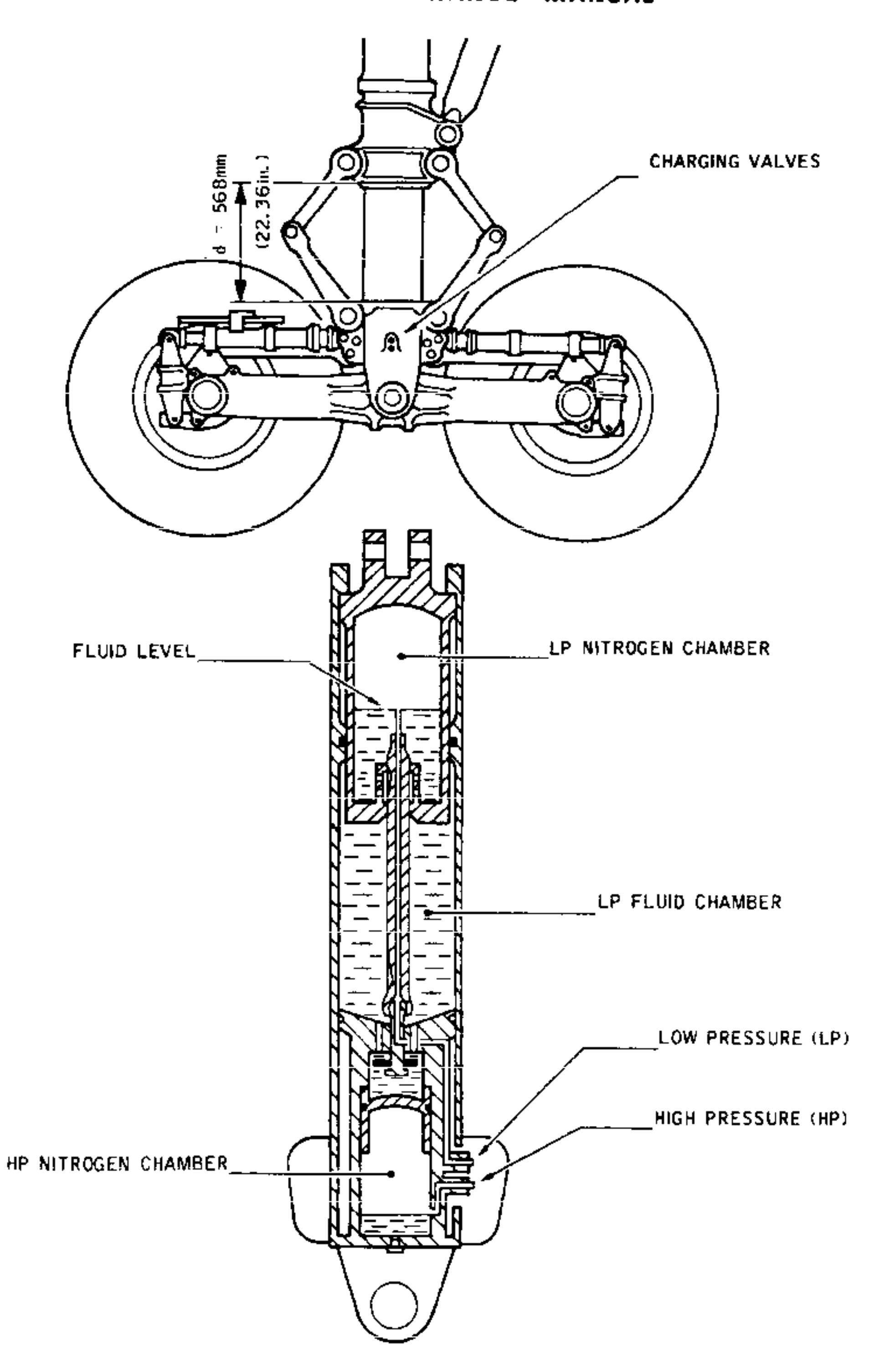
(6) Position safety stay.

(7) Remove side shroud (30), inboard on LH leg, outboard on RH leg, to gain access to charging and filling valves.



Filling and Charging Valves
Figure 301

R



CMA 32 11 27 3 ANMO

Hydraulic Fluid Level
Figure 302

R - Upper valve (blue) : Low pressure chamber (L.P.)
R - Lower valve (red) : High pressure chamber (H.P.).

(8) On L.P. charging and filling valve

(a) Remove plug (31) using bushed end wrench 167600/78

NOTE : Make certain that seal (33) is in position on filling and charging end fitting (34).

(b) Fully screw end fitting (34) onto charging valve (40).

(c) Engage wrenches (35) and (38) (C47845) onto charging valve.

NOTE : The outer wrench (35) must be in contact with all six flats of valve body (40) taking care not to catch the lockwire. The inner wrench (38) must be in contact with all six flats of valve nut (39).

(d) Slightly loosen valve nut (39) with inner wrench (38).

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(e) Gradually release pressure until the L.P. chamber is completely depressurized.

(9) On H.P. charging and filling valve

(a) Remove plug (32) using bushed end wrench 167600/78

NOTE : Make certain that seal (33) is in position on filling and charging end fitting (34).

(b) Fully screw end fitting (34) onto charging valve (40).

(c) Engage wrenches (35) and (38) (C47845) onto charging valve

NOTE : The outer wrench (35) must be in contact with all six flats of valve body (40) taking care not to catch the lockwire. The inner wrench (38) must be in contact with all six flats of valve nut (39).

(d) Slightly loosen valve nut (39) with inner wrench

(38).

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(e) Gradually release pressure until H.P. chamber is completely depressurized.

C. H.P. Chamber Fluid Replenishment and Level Adjustment

(1) Connect filling tool pipe (36) to H.P. chamber filling and charging end fitting (34).

(2) Open valve by one turn and a half maximum using inner wrench (38).

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(3) Inject product No.012 using filling tool

NOTE : Bleed air from time to time during filling using filling tool check cock vent.

(4) Disconnect filling tool and allow excess fluid to flow into a container.

(5) Adjust fluid level by pressurizing with nitrogen to 20 bars (290 psi) to expel excess fluid.

(6) Close valve.

D. Charging of H.P. Chamber

WARNING : THIS OPERATION REQUIRES A CHARGING ASSEMBLY EQUIPPED WITH HIGH PRESSURE PIPES.

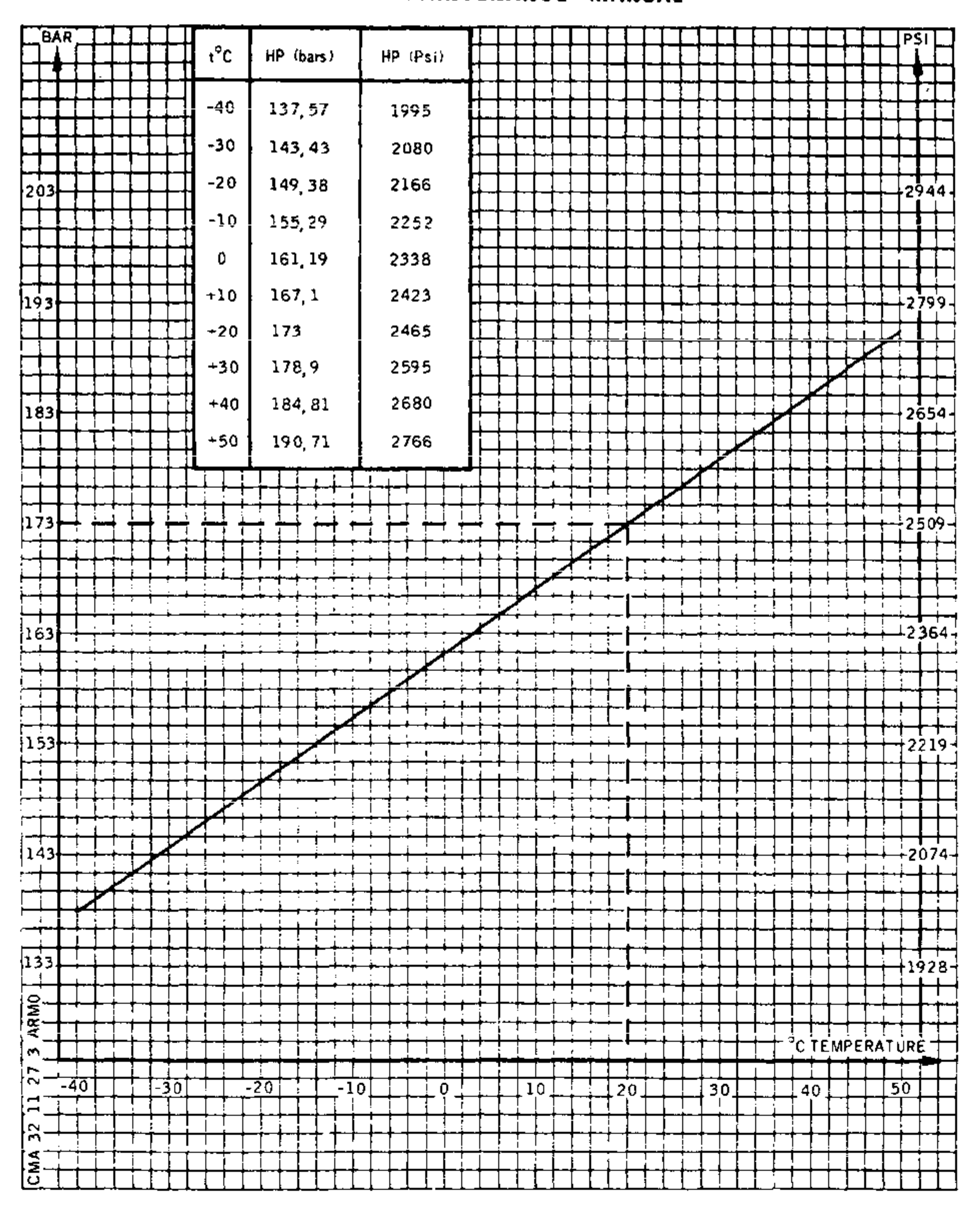
(1) Connect pipe (37) of charging assembly to charging end fitting (34).

(2) Open valve using inner wrench (38).

CAUTION : CHARGE VERY GRADUALLY.

(3) Charge H.P. chamber.

Adjust pressure according to ambient temperature as per graph.
H.P. chamber nominal charging pressure at 20°C (68°F): 173 bars (2510 psi)
(Ref. Fig. 303)



t°C	HP (bars)	HP (Psi)
-40	137,57	1995
-30	143,43	2080
-20	149,38	2166
-10	155,29	2252
0	161,19	2338
+10	167,1	2423
+20	173	2465
+30	178,9	2595
+40	184,81	2680
+50	190,71	2766

Variations in H.P. Charging
Pressure Versus Temperature
Figure 303

(4) After charging, allow pressure to stabilize then correct if necessary.

(5) Close charging valve using inner wrench (38).

E. L.P. Chamber Fluid Replenishment and Level Adjustment

NOTE : This operation must be carried out with shock absorber fully extended. With shock absorber fully extended dimension d on sliding tube = 568 mm (22.36 in).

(1) Connect filling tool pipe (36) to L.P. chamber filling and charging end fitting (34).

(2) Open valve by one turn and a half maximum using inner wrench (38).

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(3) Inject product No.012 using filling tool.

NOTE : Bleed air from time to time during filling using filling tool check cock vent.

(4) The quantity of fluid injected is sufficient when free flow of about 2 litres (0.44 Imp. Gal) (0.53 US Gal) is observed during bleeding. Remove filling tool.

R (5) Allow fluid to settle.

(6) Adjust fluid level by charging the L.P. chamber to 20 bars (290 psi) and allow excess fluid to flow into a container.

(7) Close valve.

F. Charging of L.P. Chamber

(1) Connect pipe (37) of charging assembly, connected to a nitrogen cylinder with a pressure regulator, to charging end fitting (34).

(2) Open valve using inner wrench (38).

CAUTION : CHARGE SHOCK ABSORBER VERY GRADUALLY.

(3) Charge L.P. chamber

Adjust pressure according to ambient temperature as

per graph.
L.P. chamber nominal charging pressure at 20°C (68°F): 49 bars (710 psi)
(Ref. Fig. 304)

CAUTION : IF PRESSURE ACCIDENTALLY EXCEEDS 110 BARS IN "SHOCK ABSORBER CHARGING WITH A/C ON JACKS" CONFIGURATION, THE SHOCK ABSORBER MUST BE REMOVED FOR EXAMINATION OF INNER SAFETY STOP.

(4) After charging, allow pressure to stabilize then correct if necessary.

G. Close-Up

(1) Close valve and remove charging assembly.

(a) Close valve using inner wrench (38).

(b) Disconnect charging pipe (37).

(c) Hold valve nut with inner wrench (38) and remove charging end fitting (34).

(d) Remove wrenches (35) and (38) (C47845).

(e) Check that lockwire on valve body (40) is in correct condition.

(f) Install plugs (31) and (32) on the valves with bushed end wrench 167600/78.

(g) Carry out a leak test, using product No.117 to detect any nitrogen leakage.

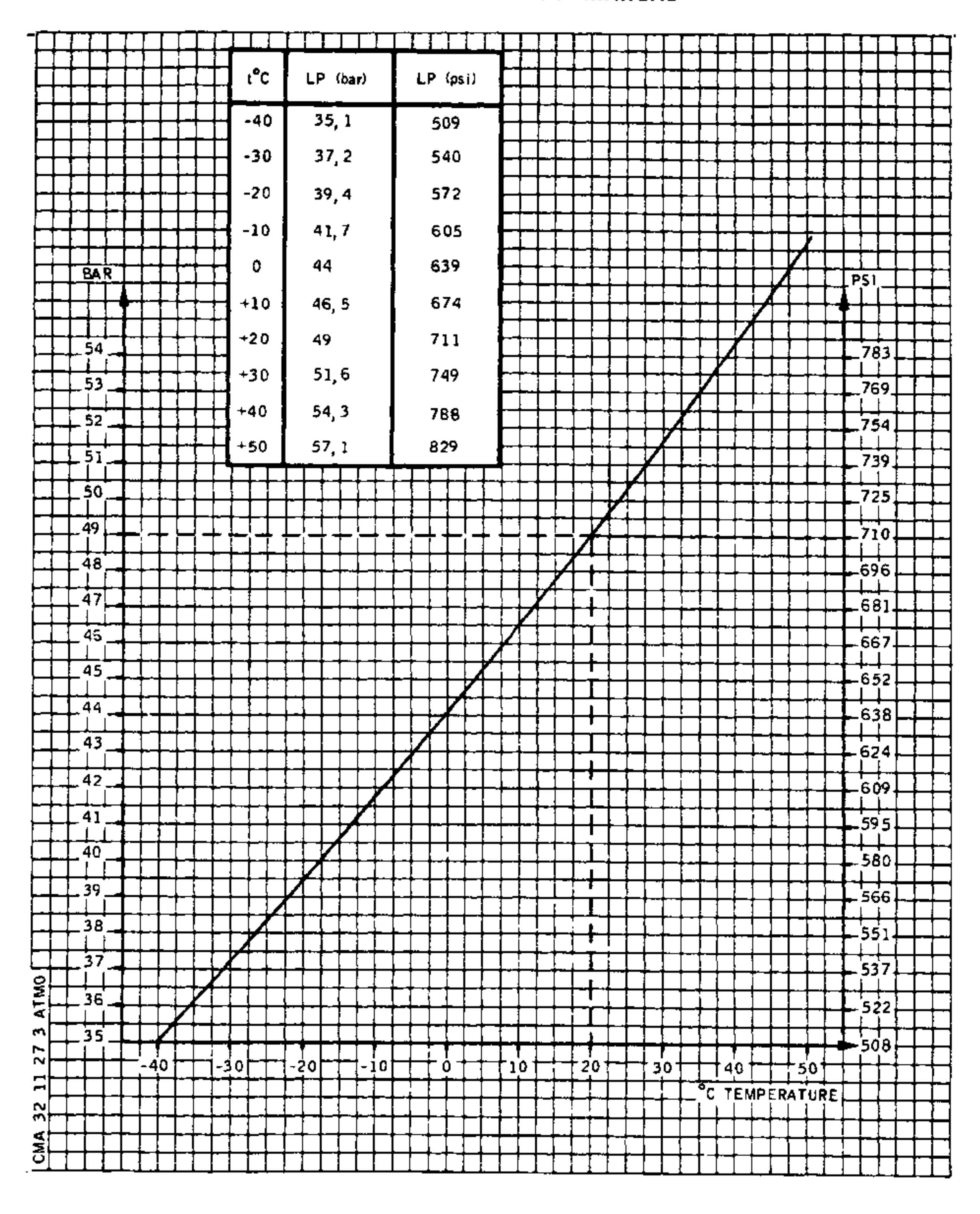
(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(3) Install side shroud (30).

(a) Install two centre screws.
Torque to between 0.9 and 1.1 m.daN (79.623 and 97.317 lbf.in.).

(b) Install two forward and aft screws.
Torque to between 0.4 and 0.5 m.daN (35.388 and 44.235 lbf.in.).

(c) Safety screws with lockwire (Ref. 20-21-13).



t°C	LP (bar)	LP (psi)
-40	35,1	509
-30	37,2	540
-20	39,4	572
-10	41,7	605
0	44	639
+10	46,5	674
+20	49	711
+30	51,6	749
+40	54,3	788
+50	57,1	829

Variations in L.P. Charging
Pressure Versus Temperature
Figure 304

R

(4) Remove safety stay.

(5) Make certain that area under aircraft is clear.

(6) Lower aircraft onto its wheels.

(7) Remove safety clips and tags and reset circuit breakers.

(8) Remove warning notice from flight compartment.

3. Topping-Up and Charging of Two Stage Main Shock Absorber with the Aircraft on its Wheels

A. General

The procedures detailed below are emergency procedures for charging and topping-up two stage main shock absorbers with the aircraft on its wheels. The load on each shock absorber can be determined from the graph. Two shock absorber configurations are possible.
(Ref. Fig. 305)

(1) Configuration 1 : Only the shock absorber L.P. chamber is compressed. Pressure in the H.P. chamber is greater than pressure in the L.P. chamber - zone A on graph.
R (Ref. Fig.306 and 307)

(a) Charge L.P. chamber with nitrogen to obtain compression dimension d according to temperature as defined by the graph. (Ref. paragraph 3. D. below)

(b) If necessary, correct H.P. chamber pressure according to temperature.
(Ref. Fig. 303)

(2) Configuration 2 : Both the shock absorber H.P. chamber and L.P. chamber are compressed. Pressure in H.P. chamber equal to pressure in L.P. chamber - zone B on graph.
R (Ref. Fig.306 and 307)

It is impossible to determine which of the chambers requires adjustment and therefore either the complete procedure as described in paragraph 3. D. must be performed or the charging and topping-up of the two stage main shock absorber must be carried out with the aircraft on jacks (paragraph 2.).

B. Equipment and Materials

DESCRIPTION	PART NO.
Air Hydraulic Test Set	
Supercharger (250 bars) (3600 psi)	
Hydraulic Fluid (Ref. 20-30-00, No.012)	
Source of Compressed Nitrogen	

DESCRIPTION	PART NO.
Rule (500 mm)	
Container	
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	
Leak Detector Fluid (Ref. 20-30-00, No.117)	
Wrench - Bushed End	167600/78
Set of Concentric Tube Wrenches and Extension Tube	C47845

C. Prepare

(1) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(2) Display warning notice in flight compartment.

(3) Remove side shroud (30), inboard on LH leg, outboard on RH leg, to gain access to charging and filling valves.

R - Upper valve (blue) : Low pressure chamber (L.P.)
R - Lower valve (red) : High pressure chamber (H.P.).

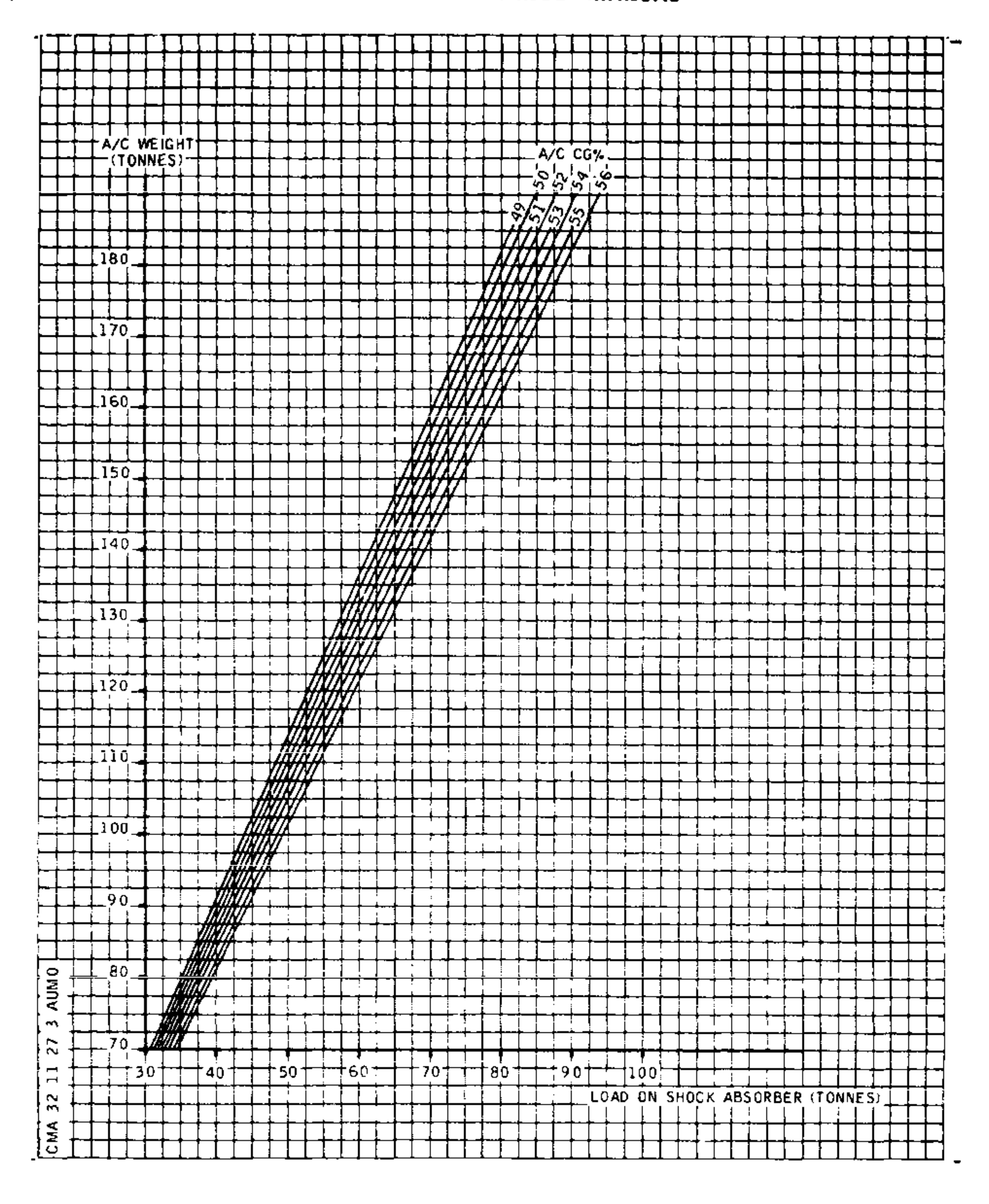
(4) Install charging and filling tools on L.P. and H.P. charging valves.
(Ref. Fig. 301)

(a) Remove valve plugs using bushed end wrench 167600/78.

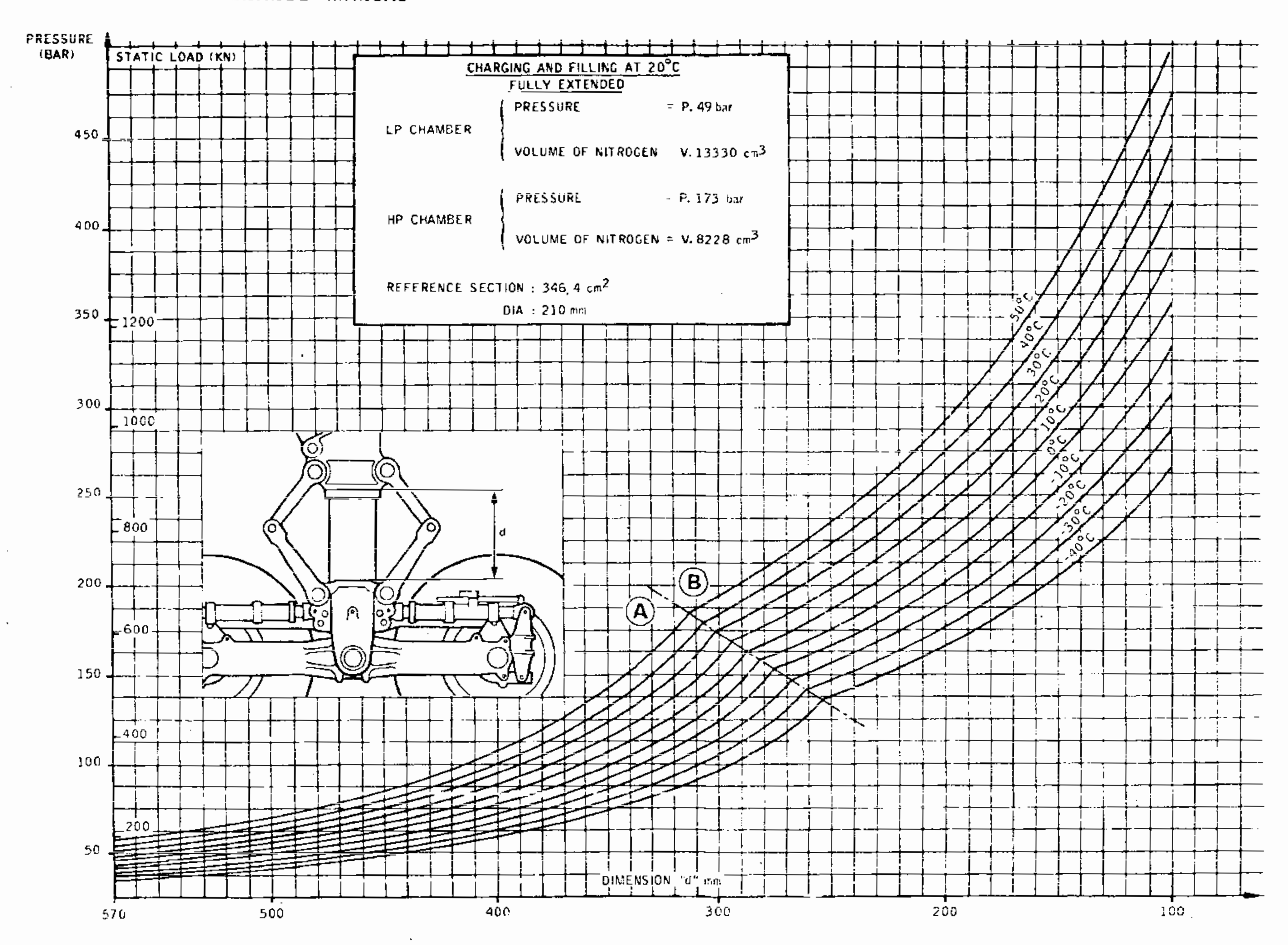
NOTE : Make certain that seals (33) are in position on filling and charging end fittings (34).

(b) Fully screw end fittings (34) onto L.P. and H.P. charging valves (40).

(c) Engage wrenches (35) and (38) (C47845) onto the charging valves.

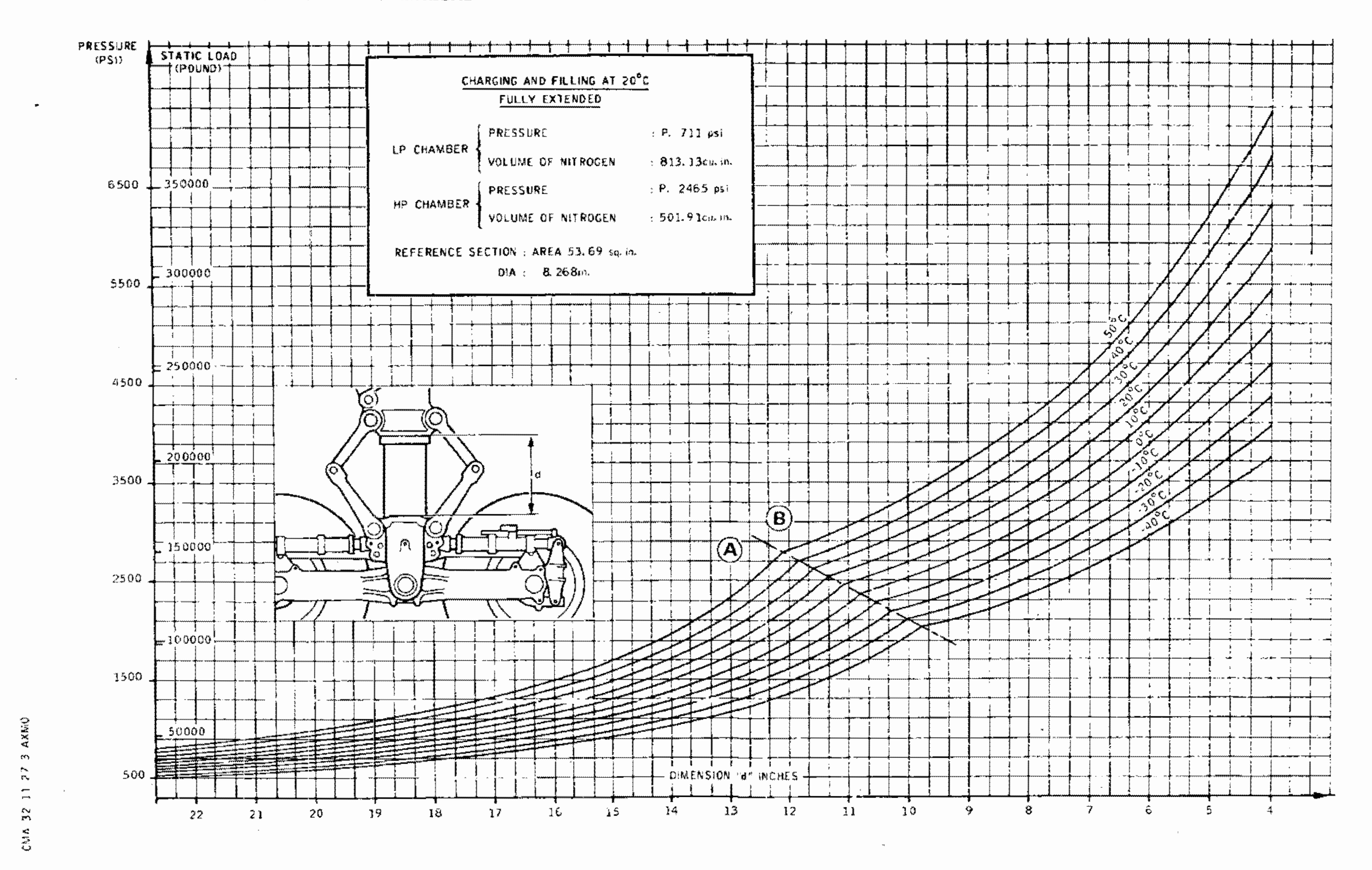


Reaction on Main Gear
Figure 305



Graph of Shock Absorber Compression (Isotherms)
Figure 306

R



Graph of Shock Absorber Compression (isotherms)
Figure 307

R

NOTE : The outer wrench (35) must be in contact with all six flats of valve body (40) taking care not to catch the lockwire. The inner wrench (38) must be in contact with all six flats of valve nut (39).

D. Charging
(Ref. Fig. 301)

(1) On L.P. filling and charging valve.

(a) Connect pipe (37) of charging assembly equipped with supercharger to charging end fitting (34).

WARNING : THIS OPERATION REQUIRES A CHARGING ASSEMBLY EQUIPPED WITH HIGH PRESSURE PIPES.

(b) Open L.P. valve using inner wrench (38).

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(c) Charge very gradually to obtain dimension d according to temperature as defined by the graph.
R (Ref. Fig.306 and 307)

(d) Close charging valve using inner wrench (38) and shut down nitrogen supply.

(e) Remove charging tool (Ref. paragraph F. Close-Up)

(2) On H.P. filling and charging valve.

(a) Connect pipe (37) of charging assembly equipped with supercharger to charging end fitting (34).

WARNING : THIS OPERATION REQUIRES A CHARGING ASSEMBLY EQUIPPED WITH HIGH PRESSURE PIPES.

(b) Open H.P. valve using inner wrench (38).

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(c) Adjust pressure in H.P. chamber to nominal pressure according to temperature.
(Ref. Fig. 303)

(d) Close valve using inner wrench (38) and shut

down nitrogen supply.

(e) Remove charging tool (Ref. paragraph F. Close-Up)

E. Fluid Topping-Up and Charging

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR WHEN RELEASING SHOCK ABSORBER PRESSURE.

(1) Release pressure until shock absorber is fully compressed.

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(a) Open H.P. valve using inner wrench (38) and slowly release pressure from H.P. chamber. Leave valve open.

(b) Open L.P. valve using inner wrench (38) and slowly release pressure from L.P. chamber. Leave valve open.

(2) Top up L.P. chamber

(a) Connect filling tool pipe (36) to L.P. chamber filling and charging end fitting.

(b) Inject 7 litres (1.54 Imp. Gal) (1.85 US Gal) approx. of product No.012 into L.P. chamber. Close valve and disconnect pipe (36). Connect a pipe with one end in fluid recovery container to L.P. valve and open valve. Leave valve open.

(3) Charge H.P. chamber with nitrogen

(a) Connect pipe (37) of charging assembly equipped with a supercharger to H.P. chamber charging and filling end fitting.

(b) Slowly charge H.P. chamber with nitrogen and allow fluid from L.P. chamber to flow into recovery container.

(c) Charge H.P. chamber to nominal pressure according to temperature and close valve using inner wrench (38). Shut down nitrogen supply. (Ref. Fig. 303)

(4) Charge L.P. chamber

(a) Connect filling tool to L.P. chamber charging and filling end fitting.

(b) Inject 3 litres (0.66 Imp. Gal) (0.79 US Gal) of product No.012 into L.P. chamber using hand pump.

NOTE : Pressure at pump can reach 250 bars (3625 psi).

(c) Close valve using inner wrench (38).

(d) Disconnect filling tool and connect charging assembly equipped with supercharger.

(e) Charge L.P. chamber to obtain dimension d.
R (Ref. Fig.306 and 307)

(f) Close valve using inner wrench (38) and shut down nitrogen supply.

(g) Allow pressure to stabilize for 15 minutes approx. then check dimension d.

(h) If necessary, correct volume of nitrogen to obtain dimension d.
Close valve using inner wrench (38) and shut down nitrogen supply.

F. Close-Up

(1) Remove charging assemblies

(a) Make certain that valves are closed using inner wrenches (38).

(b) Disconnect charging pipes.

(c) Remove charging end fittings (34) holding all six flats with inner wrench (38).

(d) Remove wrenches (35) and (38) C47845.

(e) Check that lockwire on each valve body (40) is in correct condition.

(f) Install valve plugs using bushed end wrench 167600/78.

(g) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid

remains.

(2) Install side shroud (30).

(a) Install two centre screws.
Torque to between 0.9 and 1.1 m.daN (79.623 and 97.317 lbf.in.).

(b) Install two forward and aft screws.
Torque to between 0.4 and 0.5 m.daN (35.388 and 44.235 lbf.in.).

(c) Safety screws with lockwire (Ref. 20-21-13).

(3) Remove warning notice from flight compartment.

R R R 4. Charging of the Main Landing Gear Shock Absorber with the Aircraft on its Wheels, to allow the Aircraft to Return to Main Base

R A. General

R R R R R This Topic gives a temporary procedure for the recharging of a main landing gear shock absorber with the weight of the aircraft on its wheels. It is only to be carried out when a shock absorber has a fault which does not require the immediate replacement of the shock absorber.

R R R R R R CAUTION: THIS TEMPORARY PROCEDURE IS ONLY TO BE USED TO ALLOW THE AIRCRAFT TO RETURN TO MAIN BASE. IT IS IMPERATIVE THAT THIS EXCEPTIONAL PROCEDURE IS FOLLOWED BY EITHER THE CORRECT CHARGING PROCEDURE OR REPLACEMENT OF THE SHOCK ABSORBER ON RETURN OF THE AIRCRAFT TO MAIN BASE.

B. Equipment and Materials

DESCRIPTION	PART NO.
Air Hydraulic Test Set	-
Supercharger (250 bar)	-
Hydraulic Fluid (Ref. 20-30-00, No.12)	-
Source of Compressed Nitrogen	-
Rule (500 mm)	-
Lockwire Dia. 0.8 mm (0.032 in) (Corrosion Resistant Steel)	-
Leak Detector Fluid (Ref. 20-30-00, No.117)	-
Wrench - Bushed End	167600/78
Set of Concentric Tube Wrenches and Extension Tube	C47845

C. Prepare

(1) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(2) Display warning notice in flight compartment.

(3) Remove side shroud (30), inboard on LH leg, outboard on RH leg, to gain access to charging and filling valves

- Upper valve (blue) : low pressure chamber (L.P.)
- Lower valve (red) :high pressure chamber (H.P.)

(4) Install charging and fitting tools on LP end HP charging valves.
(Ref. Fig. 301)

(a) Remove valve plugs using bushed end wrench 167600/78.

NOTE : Make certain that seals (33) are in position on filling and charging end fittings (34).

(b) Fully screw end fittings (34) onto LP and HP charging valves (40).

(c) Engage wrenches (35) and (38) (C47845) onto the charging valves.

NOTE : The outer wrench (35) must be in contact with all six flats of valve body (40) taking care not to catch the lockwire. The inner wrench (38) must be in contact with all six flats of valve nut (31).

D. Fully Compress Shock Absorber

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR WHEN RELEASING SHOCK ABSORBER PRESSURE.

(1) On HP and LP valves

CAUTION : HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(a) Open HP valve using inner wrench (38) and slowly release pressure from HP chamber. Leave valve open.

(b) Open LP valve using inner wrench (38) and slowly release pressure from LP chamber.
Leave valve open.

E. Topping-Up and Charging Shock Absorber.

(1) Top up LP chamber.

(a) Connect filling tool pipe (36) to LP chamber filling and charging end fitting.

(b) Inject hydraulic fluid Product No.012 into LP chamber until correct fluid level is obtained (fluid flows through charging valve).
Leave valve open.

(2) Top up and charge HP chamber

WARNING: THIS OPERATION REQUIRES A CHARGING ASSEMBLY EQUIPPED WITH HIGH PRESSURE PIPES.

(a) Connect pipe (37) of charging assembly equipped with a supercharger to charging end fitting (34).

(b) Slowly charge HP chamber with nitrogen and allow fluid from LP chamber to flow into recovery container.

(c) Close LP valve using inner wrench (38).

(d) On HP valve, replace charging assembly pipe (37) by filling tool pipe (36) and inject 1.5 litres of Product No.012 into HP chamber.

(e) Replace filling tool pipe (36) by charging assembly pipe (37) and obtain correct level by gradually charging with nitrogen at 20 bar
R (290 psi) and allowing excess fluid to flow through valve.

(f) Charge HP chamber to temporary, return-to-base pressure of 200 bar (2902 psi).

(g) Close HP valve using inner wrench (38).

(3) Charge LP chamber

(a) Connect pipe (37) of charging assembly equipped with a supercharger to LP charging end fitting (34).

WARNING: THIS OPERATION REQUIRES A CHARGING ASSEMBLY EQUIPPED WITH HIGH PRESSURE PIPES.

(b) Open LP valve using inner wrench (38).

CAUTION: HOLD VALVE BODY (40) WITH OUTER WRENCH (35) DURING ALL VALVE MANOEUVRES.

(c) Gradually charge LP chamber with nitrogen to obtain temporary, return-to-base dimension 'd' as given on the graph. (Ref. Fig.308 and 309)

F. Close-Up

(1) Remove charging assembly

(a) Make certain that valve is closed using inner wrench (38).

(b) Disconnect charging pipe.

(c) Remove charging end fittings (34) holding all six flats with inner wrench (38).

(d) Remove wrenches (35) and (38) C47845.

(e) Check that lockwire on each valve body (40) is in correct condition.

(f) Install valve plugs using bushed end wrench 167600/78.

(g) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

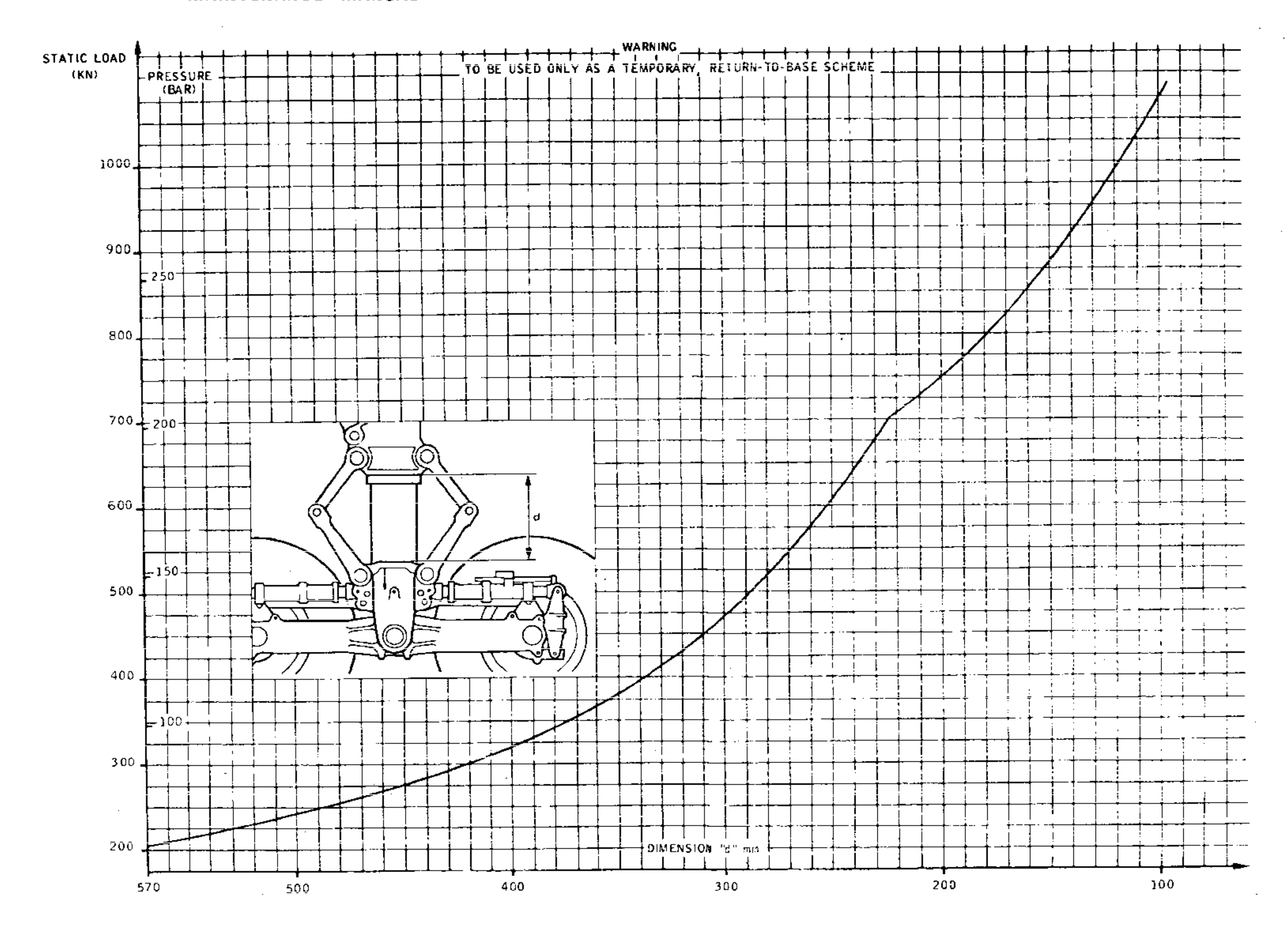
(2) Install side shroud (30).

(a) Install two centre screws
Torque to between 0.9 and 1.1 m.daN (79.623 and 97.317 lbf.in).

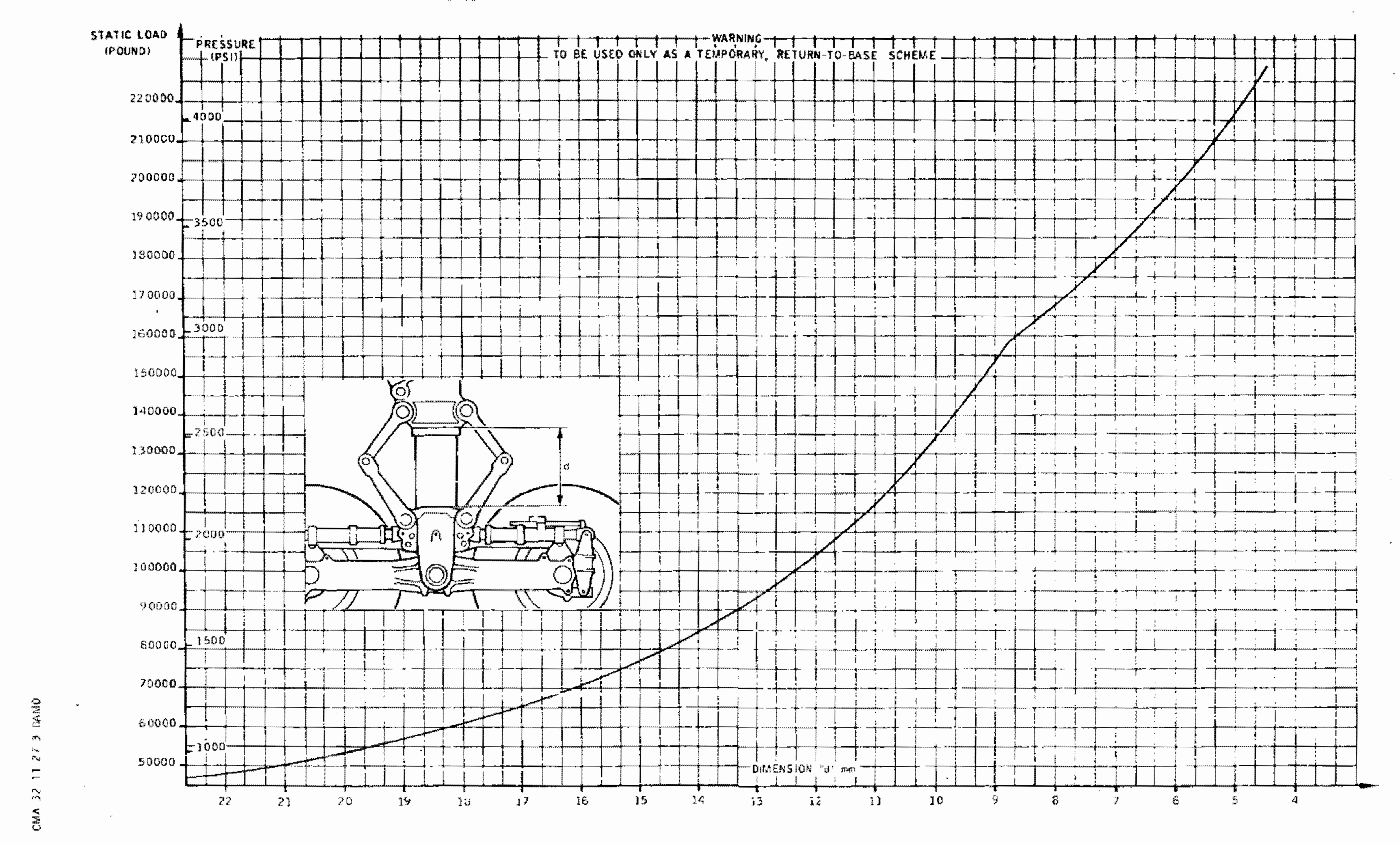
(b) Install two forward and aft screws.
Torque to between 0.4 and 0.5 m.daN (85.388 and 44.235 lbf.in).

(c) Safety screws with lockwire (Ref. 20-21-13).

(3) Remove warning notice from flight compartment.



Graph of Shock Absorber Compression
(Return-to-Base)
Figure 308



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Graph of Shock Absorber Compression
(Return-to-Base)
Figure 309

R

RH AND LH SHOCK ABSORBER - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A main gear shock absorber is housed in each main gear leg and consists of a plunger tube and a sliding tube.
The plunger tube is attached to the lower shortening rod by means of a pin. The sliding tube is guided in gear leg by means of spherical bearings.
R The shock absorber is of the two stage type (L.P. chamber and
R H.P. chamber) with separator piston.

2. Main Shock Absorber

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001

DESCRIPTION	PART NO.
Safety Stay	
Trolley - Lower Assy	C21995
Collar - Safety	257600/78
Tool - Special	175800/78
Tool - Special	175900/78
Extractor	256400/78
Fixture	250100/78
Grease (Ref. 20-30-00, No.051)	
Sealant (Ref. 20-30-00, No.352)	
Lockwire - Dia. 0.8 mm (0.032 in.) Corrosion Resistant Steel	
Circuit Breaker Safety Clips	
Access Platform 2.74 m (9 ft)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Install safety stay.

(6) Check that visor is not uplocked.

(7) On centre console, check that brake selector lever is in NORM position.

(8) Display a warning notice in flight compartment prohibiting use of brakes.

(9) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT	1-213	G 131	S16
R	O/LOAD IND			
R				
R	WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
R				
R	UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
R	UC SELECTOR RAISE CONT		G 2	A 7
R	UC LOWER DOORS OPEN SUP		G 3	A 8
R	UC SELECTOR OPEN SUP		G 4	A 9
R				
R	HYD GRND CHECK OUT SEL	15-216	M 626	F22
R	VALVE CONT			

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(10) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00 and 29-21-00, Servicing).
Open access door 151DB and depressurize Emergency braking system by opening valve 3661.

(11) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(12) Remove front deflector (Ref. 32-11-12, Removal/Installation).

(13) Remove wheels (Ref. 12-37-00).

(14) Remove brake units (Ref. 32-42-11, Removal/Installation).

(15) Remove centre deflector (Ref. 32-11-13, Removal/

Installation).

(16) Disconnect torque links at their attachment at base of shock absorber sliding tube. (Ref. 32-11-29, Removal/Installation).

(17) Disconnect sliding tubes at their lower attach points (Ref. 32-43-61 and 32-44-63, Removal/Installation).

(18) Disconnect electrical wiring and hydraulic lines likely to obstruct shock absorber removal.

(19) Depressurize shock absorber (Ref. 32-11-27, Servicing).

(20) Remove main gear weight microswitch (Ref. 32-31-93, Removal/Installation).

(21) Position trolley C21995.

(22) Install safety collar 257600/78.

C. Remove

R **ON A/C 001-005,
(Ref. Fig. 401)

R After SB 32-020 For A/C 001-005,

(Ref. Fig. 402)
(Ref. Fig.403 and 404)

(1) Removal at upper bearing (14)

(a) Remove sealing beads at pins (13) and (24).

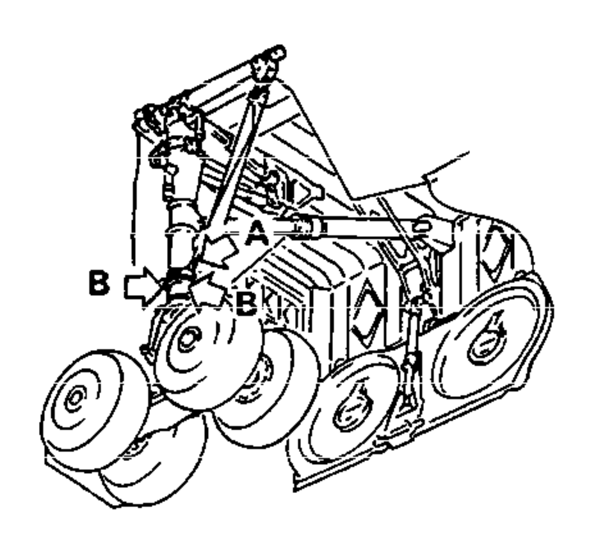
(b) Cut and remove lockwire, remove shouldered pin lock screws (11).

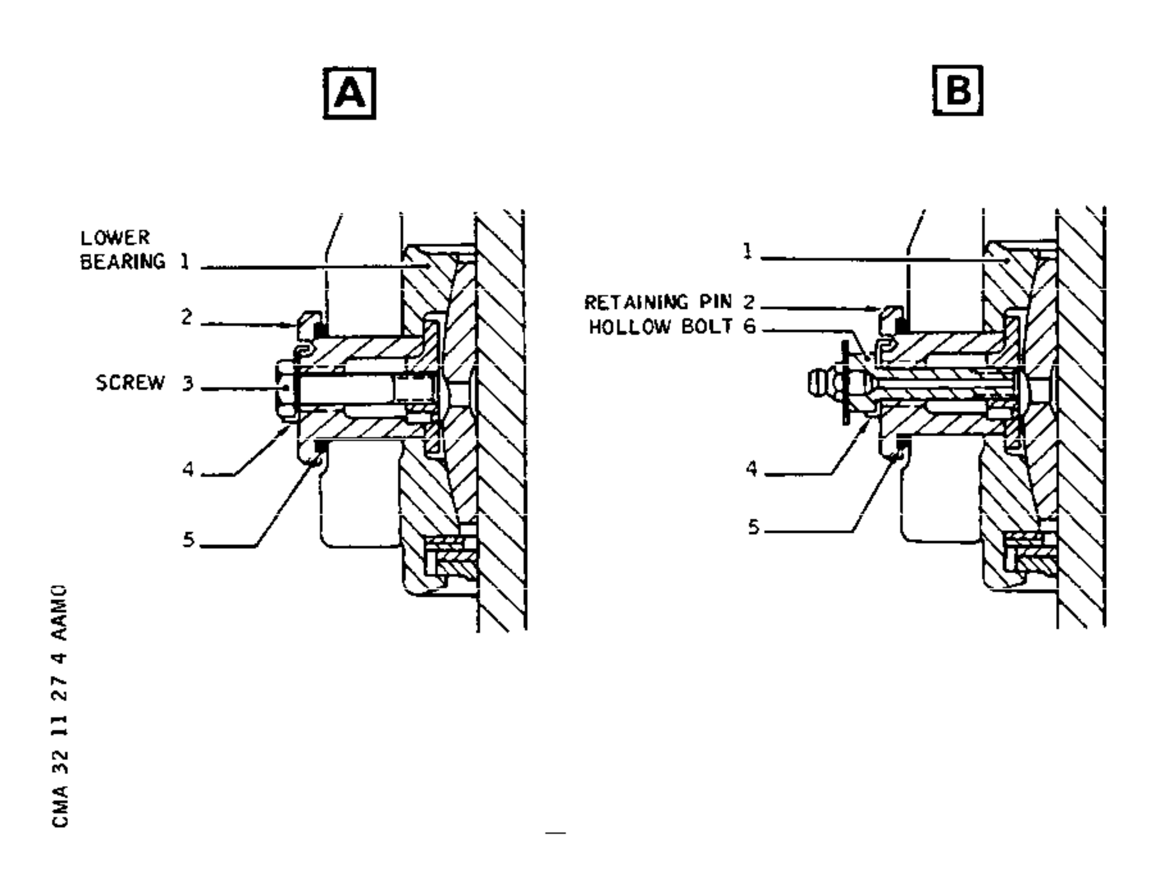
(c) Remove shouldered pin (24) using special tool 175800/78 and retain its adjustment washer (23) for reinstallation.

NOTE : Keep this washer paired with its bolt.

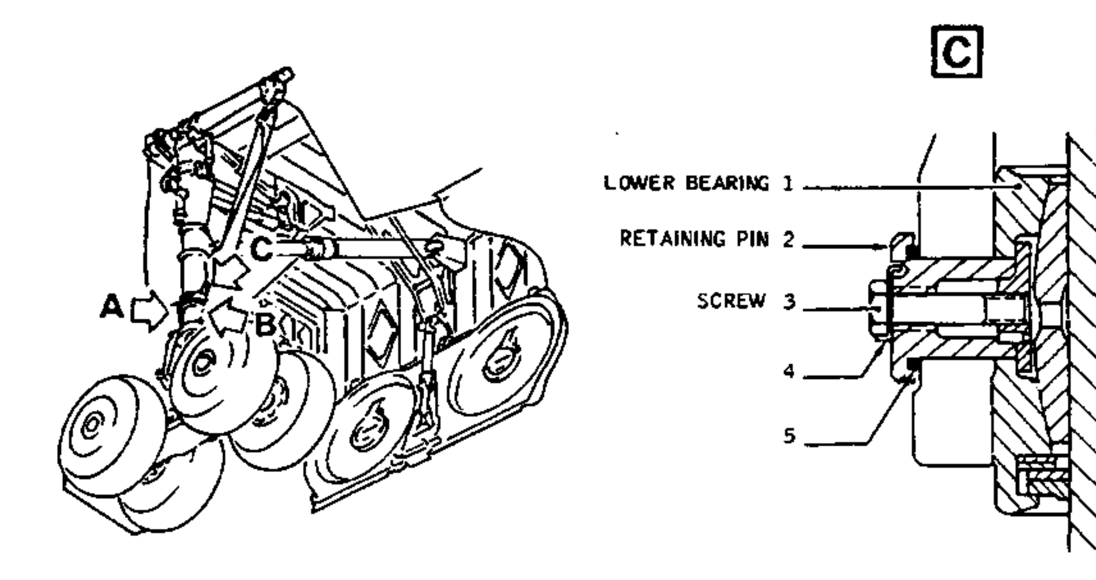
(d) Screw in threaded insert (38) No. 250113/78 in place of pin (24).

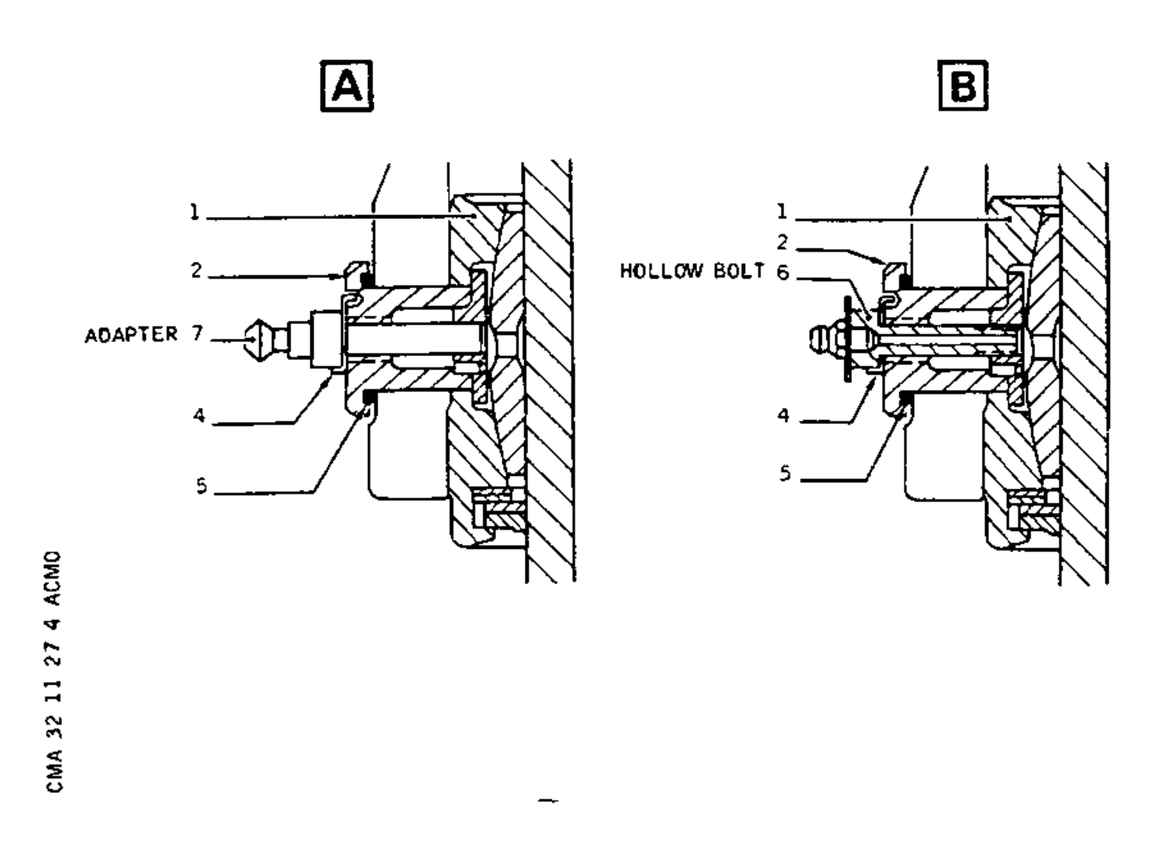
(e) Remove shouldered lubricating pin (13) using special tool 175900/78 and retain its adjustment washer (12) for reinstallation.





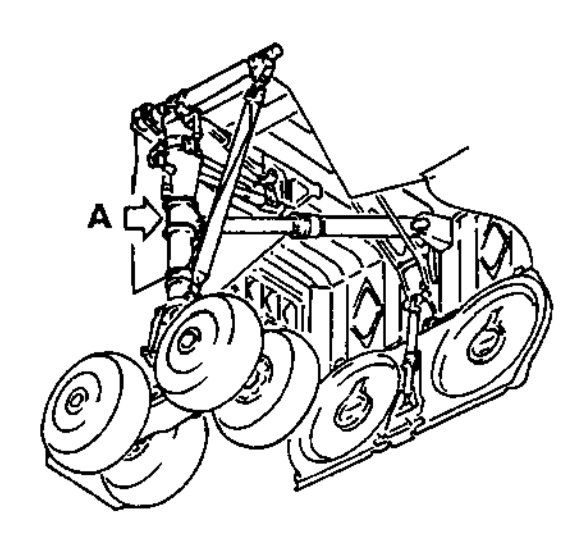
Lower Bearing
Figure 401

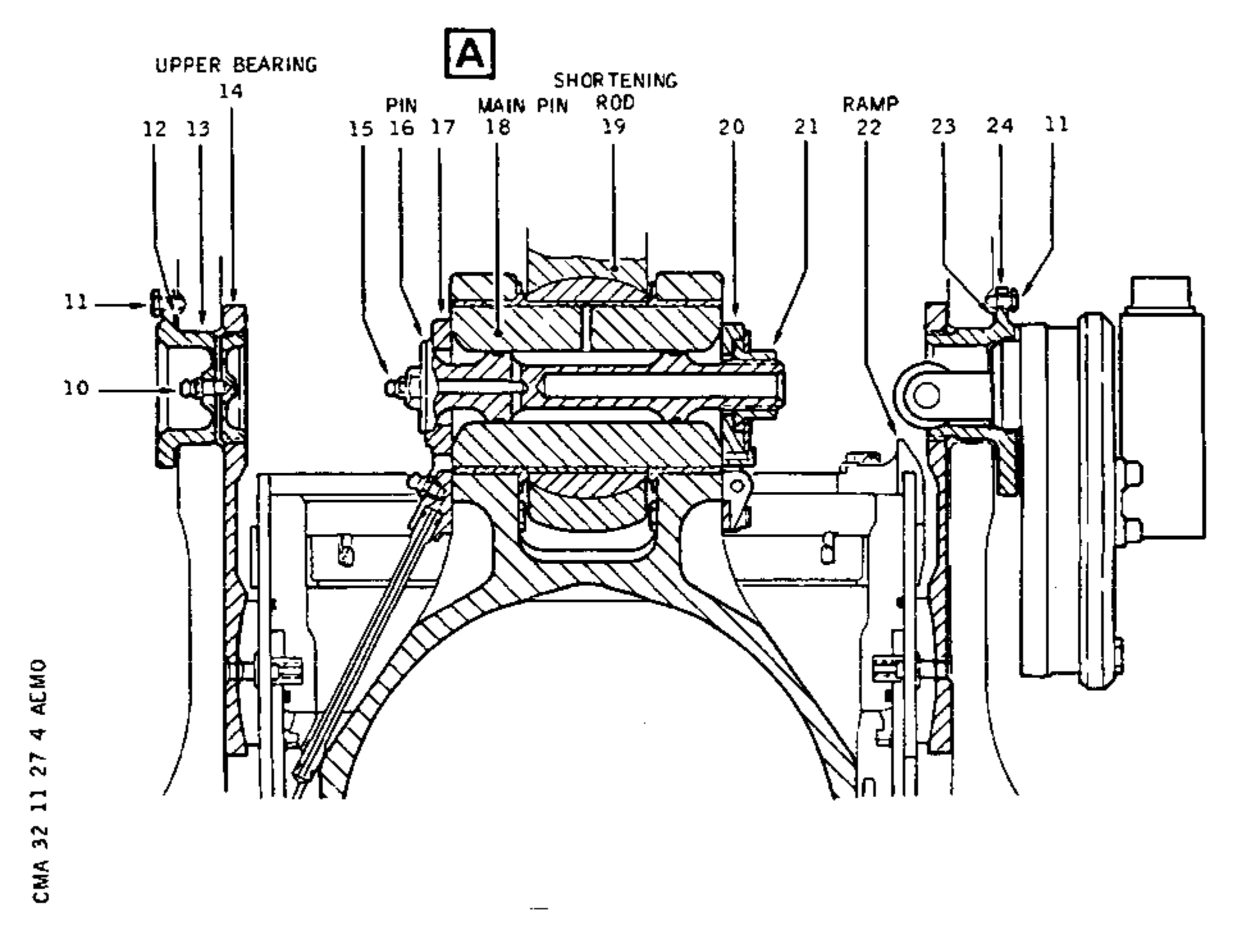




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Lower Bearing
Figure 402





- Upper Bearing

R

Figure 403

(2) Remove rod/shock absorber connecting pin.

(a) Hold inner pin (16) and unscrew captive nut (21) to push out pin (16).

(b) When nut (21) is fully unscrewed fold back nut end plate (20) to horizontal position.

(c) Withdraw inner pin (16) and fold back end plate (17) to horizontal position.

(d) Using a drift located by threaded insert (38) drive out main pin (18) as far as possible.

NOTE : This pin remains in shock absorber.

(e) Through the other orifice in landing gear leg, screw threaded spindle (34) 250101/78 into upper bearing. This bearing is thus held by pin (18).

WARNING : THE THREADED SPINDLE (34) MUST NOT PROTRUDE FROM BEARING.

(f) Remove threaded insert (38).

(3) Remove lower bearing (1)

R **ON A/C 001-005,

(a) Remove sealing bead
- At base of lower bearing
- Around screws (3) and hollow bolts (6).

(b) Fold back tabs of tab washers (4). Mark and remove screws (3) and hollow bolts (6).

R After SB 32-020 For A/C 001-005,

(a) Remove sealing bead
- At base of lower bearing
- Around screws (3), hollow bolt (6) and adapter (7).

(b) Fold back tabs of tab washers (4). Mark and remove screws (3), hollow bolt (6) and adapter (7).

(c) Using extractor 256400/78 withdraw retaining pins (2) from lower bearing.

(4) Jack up aircraft to obtain ground-to-fuselage reference

line distance of 6.066 m (19.901 ft).

(5) Remove tool/shock absorber assembly.

D. Preparation of Replacement Component

(1) On removed shock absorber.

(a) Remove brake torque arms (Ref. 32-11-32, Removal/Installation).

(b) Remove pitch dampers (Ref. 32-11-31, Removal/Installation).

(2) Carefully clean all parts to be used for shock absorber installation and check that they are in correct condition. Check in particular the condition of chrome plating on pins.

(3) Grease pins with product No.051.

(4) On replacement shock absorber (Ref. Fig.403 and 404)

(a) Half insert main pin (18) towards microswitch operating ramp (22).

(b) Immobilize upper bearing (14) using threaded spindle 250101/78 (34) picking up on pin (18).

WARNING : THE THREADED SPINDLE MUST NOT PROTRUDE FROM BEARING AND THE MAIN PIN (18) MUST NOT PROTRUDE FROM INSIDE FORK FITTING.

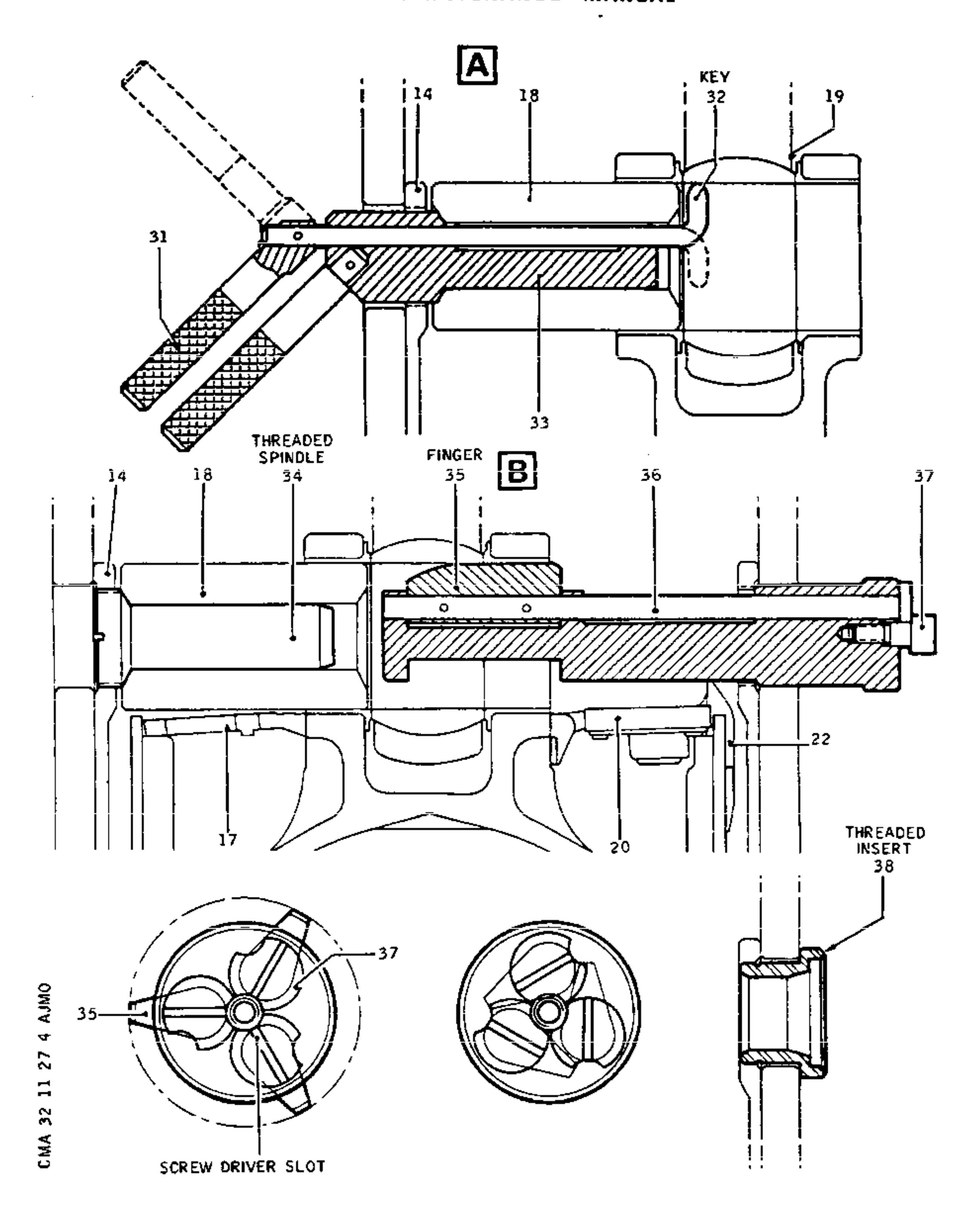
(c) Grease outside of upper bearing (14) with product No.051 to facilitate its installation in leg.

(5) Using a pulley block, place shock absorber on service trolley and position shock absorber on landing gear leg centerline.

NOTE : The position of shock absorber in relation to landing gear leg is defined by :

- Charging valves
- RH leg : valves outboard
- LH leg : valves inboard
- Microswitch operating ramp (22) to rear of aircraft.

E. Install



Fixture - Main Pin Removal/Installation
Figure 404

R

(1) Install shock absorber in landing gear leg.

(a) With shock absorber on landing gear leg center-line, lower aircraft and as soon as possible fit bearing in leg to facilitate guidance.

(b) Monitor positioning of upper bearing via landing gear leg apertures and alignment of bearing threaded holes in relation to landing gear leg apertures.

(c) Screw in threaded insert (38).

(d) Remove threaded spindle (34) holding upper bearing.

(2) Install rod/shock absorber connecting pin (Ref. Fig.403 and 404)

(a) Install shortening rod (19) in shock absorber fork fitting.

(b) As per detail A, insert shortening rod retaining system in "key retracted" position, through main pin (18) and rotate lever (31) to lift key (32) and centre rod spherical bearing in relation to main pin (18).

B (c) Before unscrewing and removing threaded insert
B (38) temporarily install stepped pin (13) on
B opposite side to hold upper bearing.

(d) As per detail B, set expansible spindle to "finger's retracted" position and insert into landing gear leg.

(e) Using a screw driver, turn finger (35) extension control rods (36) and lock spindle in "fingers extended" position by means of screw (37).

(f) Retract key (32) and push in expansible spindle while removing rod (33) retaining system.

(g) Push main pin into final position and remove expansible spindle after setting fingers to "retracted" position.

(h) Lift two end plates (17)(20) into position against main pin.

(j) Check that seals and grease nipple are correctly

installed. Insert inner pin (16).

(k) Screw in pin (16) and rotate head flat to end plate (17) flat. Screw on and tighten nut (21). Torque to between 3 and 4 m.daN (22.126 and 29.502 lbf.ft.).

NOTE : Hold pin (16) by all six flats as end plate flat is not designed to resist torque.

(3) Attach upper bearing

(a) On rear shouldered pin (24) check presence of seal and adjustment washer (23).

CAUTION : USE WASHER REMOVED AND NOT WASHER FROM REPLACEMENT SHOCK ABSORBER.

(b) Grease thread of shouldered pin (24) with Product No.051 and screw it into upper bearing using special tool 175800/78.
Torque to between 4 and 5 m.daN (29.502 and 36.878 lbf.ft.).

(c) On shouldered pin (13) check presence of grease nipple and adjustment washer (12) which were removed.

(d) Grease thread of shouldered pin (13) with Product No.051 and screw it into upper bearing using special tool No. 175900/78.
Torque to between 4 and 5 m.daN (29.502 and 36.878 lbf.ft.).

(e) Lock each shouldered pin by means of a screw (11). Torque to between 0.1 and 0.2 m.daN (8.850 and 17.701 lbf.in.).
Wirelock these screws (Ref. 20-21-13).

(4) Attach lower bearing

(a) Turn bearing (1) to align retaining pin holes.

(b) Check that seal (5) is correctly located. Install retaining pins (2).

**ON A/C 001-005,

(c) Secure each pin with tab washer (4) and screw (3) or hollow bolt (6) according to marking made

during removal.

NOTE : The hollow bolt (6) is equipped with a grease nipple and must be located outboard to the rear of the shock obsorber.

Torque screws (3) and hollow bolt (6) to between 0.2 and 0.3 m.daN (17.701 and 26.552 lbf. in.)

Safety screws (3) and hollow bolt (6) by folding tab washer tabs.

After SB 32-020 For A/C 001-005,

(c) Secure each pin with tab washer (4) and screw (3), hollow bolt (6) or adapter (7) according to marking made during removal.

NOTE : The hollow bolt (6) is equipped with a grease nipple and must be located outboard to the rear of the shock absorber.

Adapter (7) must be located outboard to the front of the shock absorber.

Screw (3) is located inboard of the shock absorber.

Torque screw (3), hollow bolt (6) and adapter (7) to between 0.2 and 0.3 m.daN (17.701 and 26.552 lbf. in.).

Safety screw (3), hollow bolt (6) and adapter (7) by folding tab washer tabs.

(5) Install main gear weight microswitch (Ref. 32-31-93, Removal/Installation).

(6) Connect torque links at their attachment at base of shock absorber sliding tube (Ref. 32-11-29, Removal/Installation) and adjust wheel alignment (Ref. 32-11-29, Adjustment/Test).

(7) Remove trolley C21995 and safety collar 257600/78.

(8) Install pitch dampers (Ref. 32-11-31, Removal/Installation).

(9) Install brake torque arms (Ref. 32-11-32, Removal/Installation).

(10) Install brake units (Ref. 32-42-11, Removal/ Installation).

(11) Connect sliding tubes at their lower attach points (Ref. 32-43-61 and 32-44-63, Removal/Installation).

(12) Connect all electrical wiring and hydraulic lines.

(13) Install centre deflector (Ref. 32-11-13, Removal/ Installation).

(14) Install wheels (Ref. 12-37-00).

(15) Install front deflector (Ref. 32-11-12, Removal/ Installation).

(16) Charge shock absorber (Ref. 32-11-27, Servicing) and make certain that fluid level is correct.

(17) Remove safety clips and tags and reset the circuit breakers. Remove warning notices from flight compartment.

(18) Check adjustment of shortening mechanism (Ref. 32-11-34, Adjustment/Test).

(19) Bleed Normal braking system (Ref. 32-43-00, Servicing).

(20) Bleed Emergency braking system (Ref. 32-44-00, Servicing).

**ON A/C 001-005,

(21) Coat screws (3), pins (13) and (24) and hollow bolt (6) with product No.352.

After SB 32-020 For A/C 001-005,

(21) Coat screw (3), pins (13) and (24), hollow bolt (6) and adapter (17) with product No.352 (Ref. 20-30-00).

F. Tests

(1) Carry out Safety Electrovalves Leakage and Electrical Supply Test (Ref. 32-31-00, Adjustment/Test - para. 4.K.).

(2) Carry out Landing Gear Retraction Manoeuvre (Ref. 32-31-00, Adjustment/Test - para. 4.L.).

(3) Carry out Landing Gear Extension Manoeuvre (Ref. 32-31-00, Adjustment/Test - para. 4.M.).

(4) Carry out Normal Braking Lights Test (Ref. 32-43-00, Adjustment/Test - para. 2.C.).

(5) Carry out Nose Gear Tachometer Generator Test (Ref. 32-43-00, Adjustment/Test - para. 2.D.).

(6) Carry out Brake Overload Test (Ref. 32-43-00, Adjustment/Test - para. 2.E.).

(7) Carry out Check of Strain Sensor Drift (Ref. 32-43-00, Adjustment/Test - para. 2.F.).

(8) Carry out BRAKES TEMP Indicator Test (Ref. 32-43-00, Adjustment/Test - para. 2.G.).

(9) Carry out Normal Braking Supply Selector Valve (G137) Test (Ref. 32-43-00, Adjustment/Test - para. 3.D.).

(10) Carry out Test of Normal Brake System Safety Valves (Ref. 32-43-00, Adjustment/Test - para. 3.F.).

(11) Carry out Check of Main Gear Wheel Braking during Landing Gear Retraction (Ref. 32-43-00, Adjustment/Test - para. 3.H.).

(12) Carry out Check of Landing Gear Weight Relay (G304, G297) Normal Braking Electrical Circuits Contacts (Ref. 32-43-00, Adjustment/Test - para. 4.E.).

(13) Carry out Check of Main Gear Tachometer Generators (Ref. 32-43-00, Adjustment/Test - para. 4.M.).

(14) Carry out Test of BRAKES EMERG Warning Light (Ref. 32-44-00, Adjustment/Test - para. 3.C.).

(15) Carry out Test of Emergency Brake System (Ref. 32-44-00, Adjustment/Test - para. 3.D.).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

WARNING: CHECK THAT AREA UNDER AIRCRAFT IS CLEAR.

(2) Remove safety stay.

(3) Lower aircraft onto its wheels.

(4) Grease shock absorber and removed hinged components (Ref. 12-22-32).

(5) Remove warning notices.

RH AND LH SHOCK ABSORBER - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. A summary visual check of the condition of the shock absorber is made during a daily routine inspection with the aircraft in normal ground configuration.

B. A more detailed check enables shock absorber pressure to be checked against several parameters.

This operation which might prove necessary is often the result of a cursory inspection, and can be carried out with the aircraft on jacks or on wheels.

2. Cursory Inspection of Main Shock Absorbers with Aircraft on Wheels
R (Ref. Fig. 601, 602 and 603)

A. Equipment and Materials

DESCRIPTION	PART NO.
500 mm Metal Rule (20 in.)	

B. Check Shock Absorber

(1) Visually check condition of sliding tube.

(2) Check for hydraulic fluid leakage (seepage).

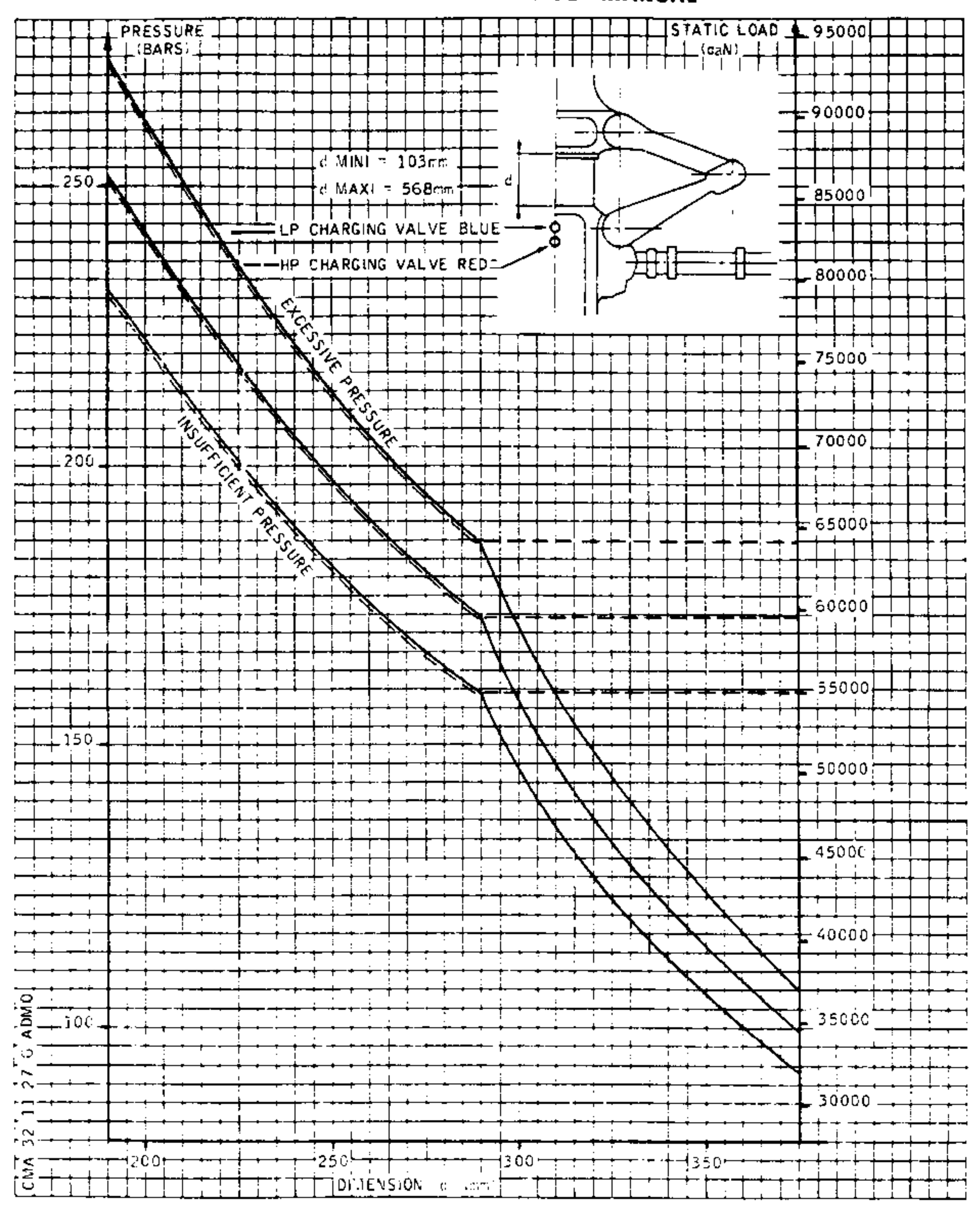
(3) Check remaining travel of shock absorber sliding tube.

NOTE : Remaining travel provides initial indication as to whether shock absorber is correctly charged.

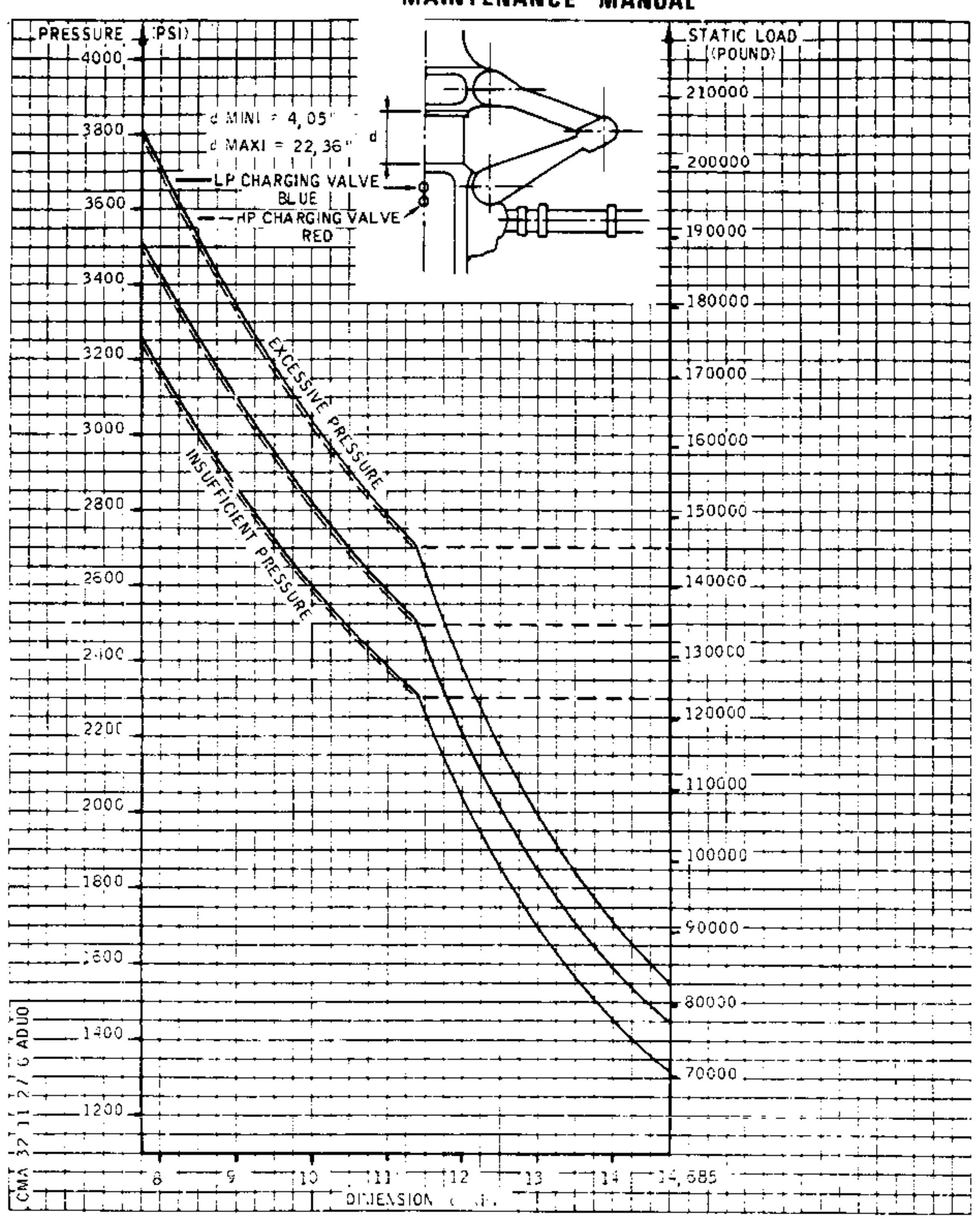
C. Conditions for Checking Remaining Travel

(1) The relevant curve shows dimension "d" of sliding tube
R remaining travel according to shock absorber load and
R the temperature.

NOTE : This curve is given on a plate bonded onto the landing gear leg.

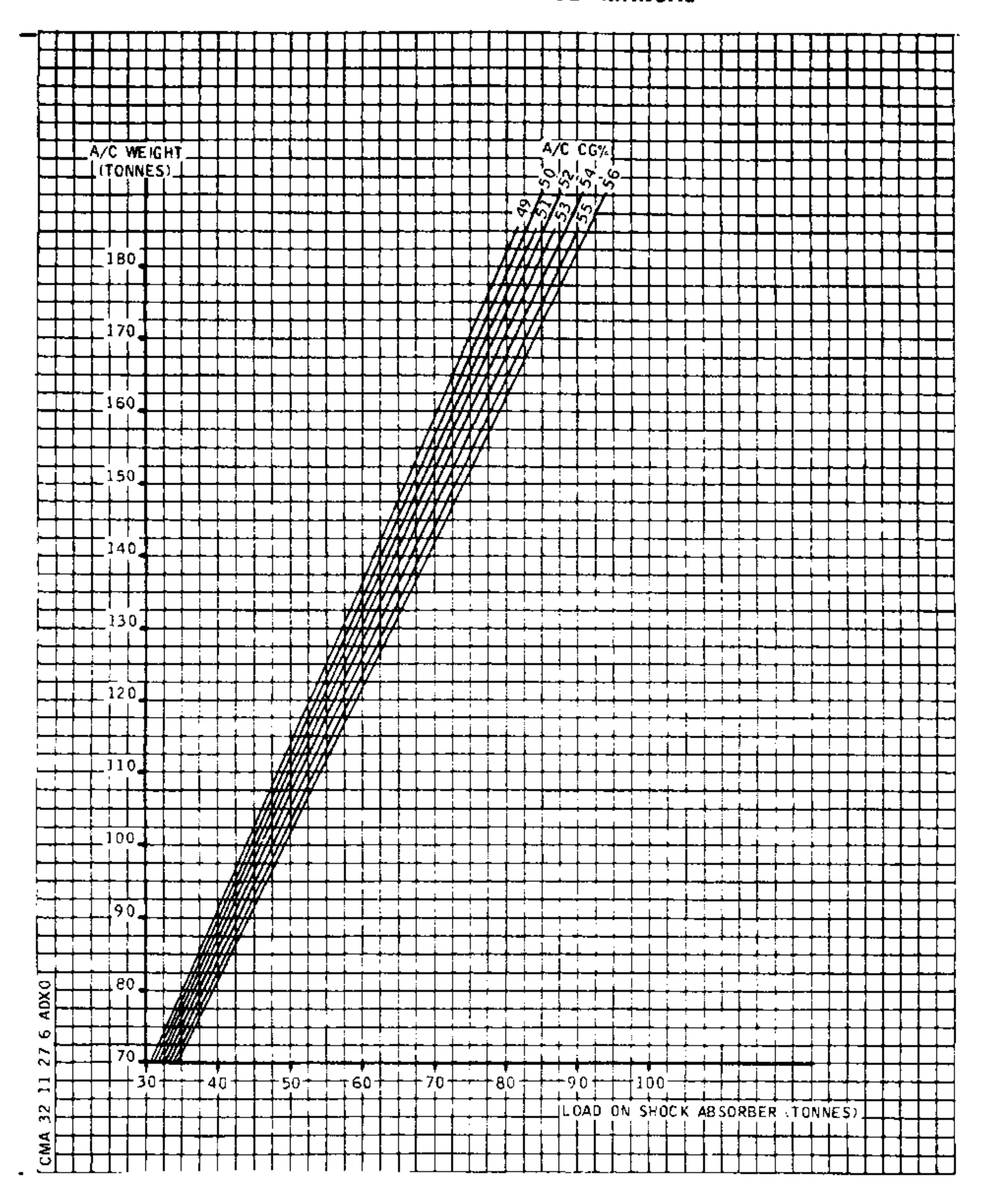


R Cursory Inspection of Main Shock Absorber
Figure 601



R

Cursory Inspection of Main Shock Absorber
Figure 602



R Reaction on Main Landing Gear.
Figure 603

D. Shock Absorber Seal Leaks

(1) Landing Gear shock absorber leaks normally occur due defective dynamic seals. Guidance is given below on such leaks. Leaks that occur for different reasons, e.g. leaking nitrogen valve or cylinder scoring shall be dealt with independently as appropriate.

CAUTION: THE ACTION TO BE TAKEN ON ANY LEAK SHALL BE APPROPRIATE TO THE SEVERITY AND FREQUENCY OF THE OCCURRENCE. EXCESSIVE LOSS OF FLUID AND/OR NITROGEN WILL ADVERSELY AFFECT THE PERFORMANCE OF THE ABSORBER AND CAN CAUSE INTERNAL ABSORBER DAMAGE.

(2) Shock Absorber Dynamic Seal Leaks

(a) Dynamic seal leaks generally occur due to seal wear. Normally such leaks are progressive, sufficiently minor and intermittent in nature to permit monitoring and planned action.

(b) Minor leaks include small/moderate extension losses and small losses of fluid. The first, which can be corrected and the latter deferred for correction. The shock absorber should function effectively to the next servicing opportunity.

(c) More immediate corrective action must be taken for serious leaks.

(d) Monitoring Minor Shock Absorber Dynamic Seal Leaks:-

NOTE: Monitor the leaks in the sequence shown below. Should further leaks occur, after completion of the sequence, i.e. the ADD is cleared or the gear serviced, repeat this monitoring sequence from the start.

1 At the first leak, raise an ADD for surveillance with a terminating date 1 month ahead, stating "First Leak MM 32-11-27 P/b 600 Para D. applies."

2 If no further leaks occur within the one month period, remove the ADD.

RB 3 If a second leak occurs within the one month period of the above ADD, revise the ADD to change the date to 1 month on from the date of the second leak, stating "Second Leak MM 32-11-27 P/b 600 Para D. applies."

RB 4 If a third leak occurs within the revised ADD date schedule, a seal change is to be performed within 20 landings of the third leak and a visual inspection of the shock absorber for fluid leaks and proper extension to be performed, at each flight.

RB NOTE: If between the third leak and the planned seal change, further leaks occur, the absorber must be fully serviced IAW 32-11-27 P/b 300 Para 2. (Fluid and Nitrogen) to ensure the serviceability of the shock absorber. See CAUTION note in (1) above.

RB 5 If no further leaks occur within the period stated in the ADD for the second leak, delete the ADD and raise a Maintenance Control File item, to require a full service IAW 32-11-27 P/b 300 Para 2. (Fluid and Nitrogen) at the next Hanger Based check. Should additional leaks occur between raising the Maintenance Control File item and the Hangar Check to accomplish it, a seal change is recommended instead of a fluid level check.

RB (3) Minor fluid leaks and very slow nitrogen leaks which are attributed to a defective Plunger/Sliding Tube dynamic seal, may sometimes be temporarily stopped by exercising the shock absorber, either by towing/taxying or by manipulating absorber pressures and jacking.

3. Check of two Stage Main Shock Absorber Pressure With Aircraft on Jacks
(Ref. Fig. 604, 605 and 606)

A. Equipment and Materials

DESCRIPTION	PART NO.
Metal Rule, at least 600mm (24 in.).	
7/16" Socket Spanner	
Set of Concentric Tube Wrenches and Extension Tube	C47845
Wrench - Bushed End	167600/78
Air Hydraulic Test Set	
Leak Detector Fluid (Ref. 20-30-00, No. 117).	
Lockwire Dia 0.8mm (0.032 in.) Corrosion Resistant Steel.	

B. Prepare

(1) Remove side shroud (1), inboard on LH leg, outboard on RH leg, to gain access to filling and charging valves.

R - Upper valve (blue) : Low pressure chamber (LP)
R - Lower valve (red) : High pressure chamber (HP)

(2) With aircraft on jacks, make certain that shock absorbers are fully extended (d=568mm)

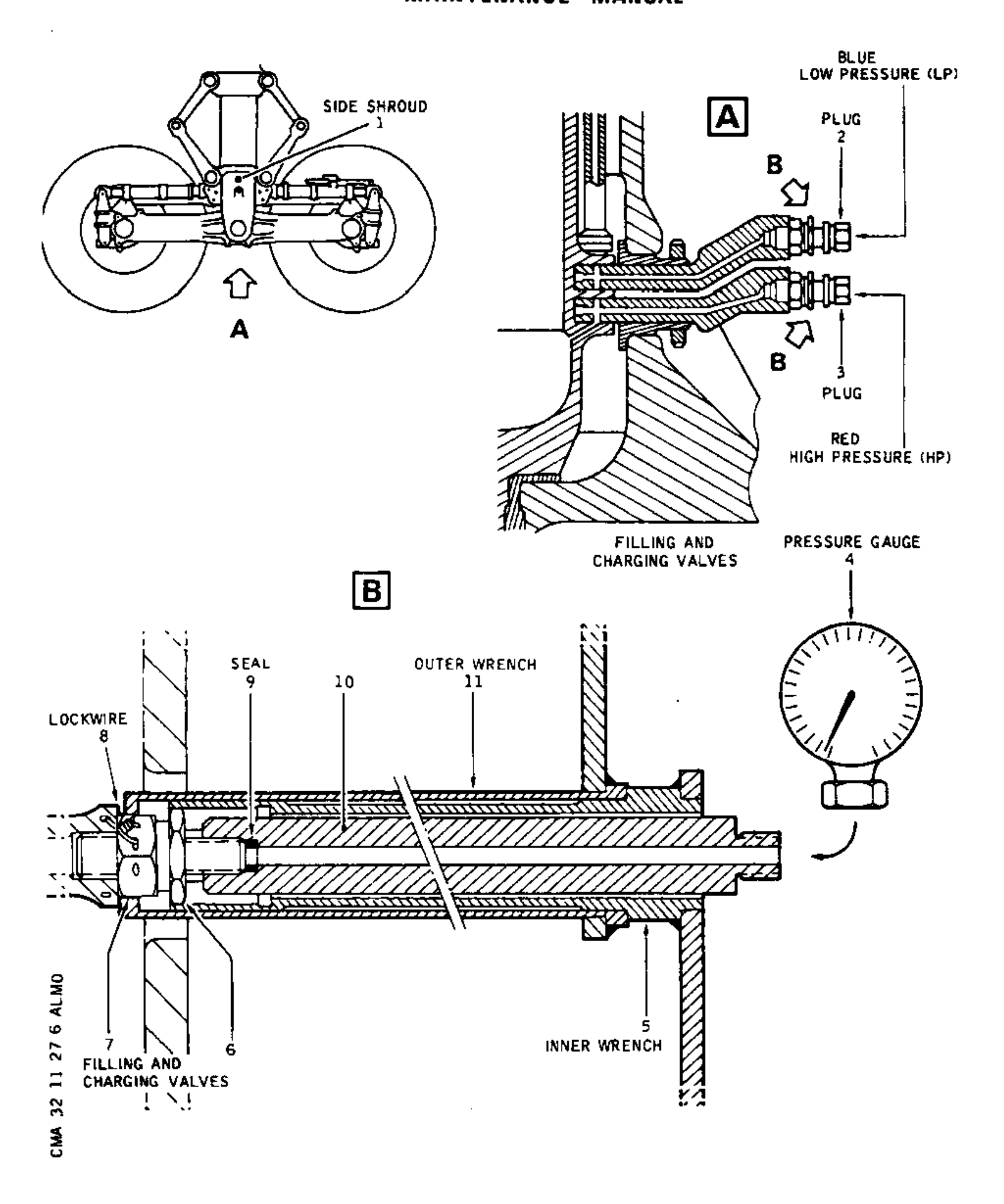
(3) Record ambient temperature or temperature of shock absorber.

C. Pressure Check

(1) HP chamber pressure.

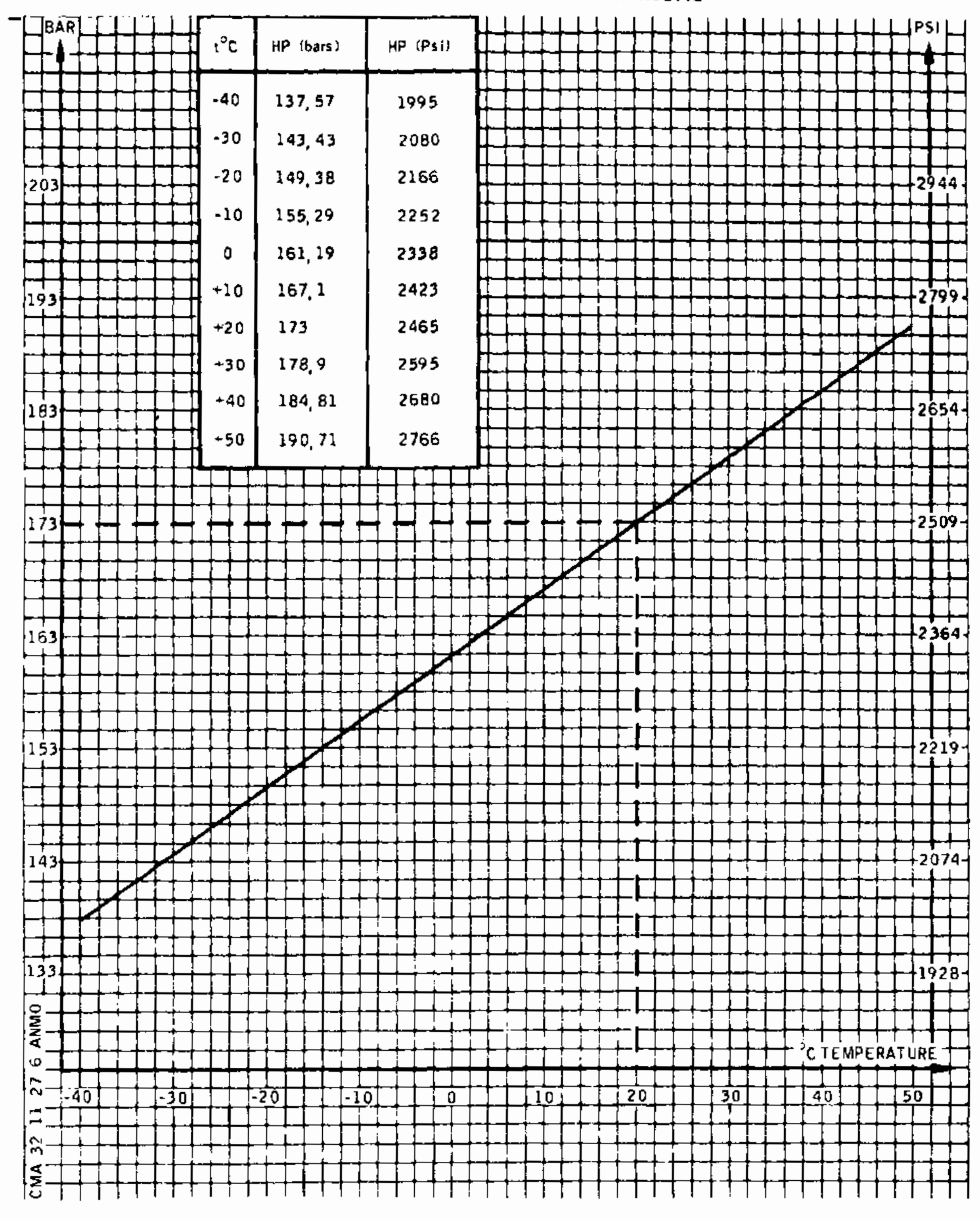
(a) On HP filling and charging valve

(a1) Remove plug (3) using bushed end wrench 167600/78



R

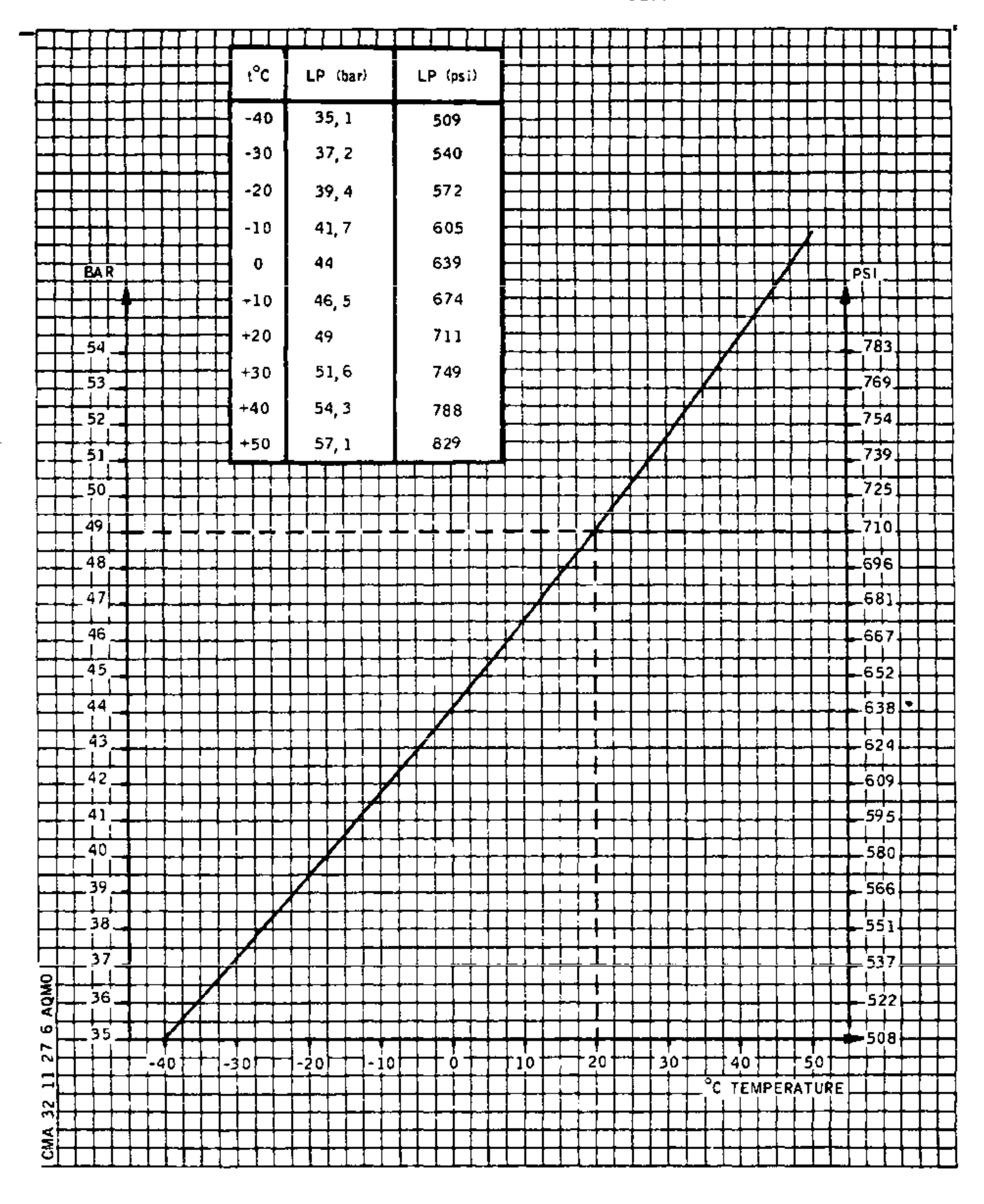
Filling and Charging Valves
Figure 604



t°C	HP (bars)	HP (Psi)
-40	137,57	1995
-30	143,43	2080
-20	149,38	2166
-10	155,29	2252
0	161,19	2338
+10	167,1	2423
+20	173	2465
+30	178,9	2595
+40	184,81	2680
+50	190,71	2766

Variations in HP Charging Pressure
versus Temperature.
Figure 605

R



t°C	LP (bar)	LP (psi)
-40	35,1	509
-30	37,2	540
-20	39,4	572
-10	41,7	605
0	44	639
+10	46,5	674
+20	49	711
+30	51,6	749
+40	54,3	788
+50	57,1	829

Variations in LP Charging Pressure
versus Temperature.
Figure 606

R

R (a2) Make certain that seal (9) is in position on filling and charging end fitting (10) (tool C47845).

R (a3) Fully screw end fitting (10) onto filling and charging valve (7)

R (a4) Engage wrenches (11) and (5) (C47845) onto filling and charging valve

R NOTE : The outer wrench (11) must be in contact with all six flats of valve body (7) taking care not to catch the lockwire (8).
The inner wrench (5) must be in contact with all six flats of valve nut (6).

R (a5) Connect a pressure gauge (4) to filling and charging end fitting (10)

R (a6) Loosen valve nut (6) one and a half turn maximum using inner wrench (5).

R CAUTION : HOLD VALVE BOBY (7) WITH OUTER WRENCH (11) DURING ALL VALVE MANOEUVRES.

R (a7) Read pressure on pressure gauge (4) and close valve with inner wrench (5).

R (a8) Compare pressure read on gauge (4) with pressure corresponding to initial shock absorber charge, taking into account the ambient temperature, as per the graph.
(Ref. Fig. 605)

R (a9) Disconnect pressure gauge (4).

R (a10) Remove filling and charging end fitting (10) while holding valve nut (6) with inner wrench (5).

R (a11) Remove the two concentric wrenches (11) and (5).

R (2) BP chamber pressure.

R (a) On BP filling and charging valve.

R (a1) Remove plug (2) using bushed end wrench

R 167600/78.

R (a2) Make certain that seal (9) is in position on filling and charging end fitting (10) (tool C47845)

R (a3) Fully screw end fitting (10) onto filling and charging valve (7).

R (a4) Engage wrenches (11) and (5) (C47845) onto filling and charging valve

R NOTE : The outer wrench (11) must be in contact with all six flats of valve body (7) taking care not to catch the locwire (8).
The inner wrench (5) must be in contact with all six flats of valve nut (6).

R (a5) Connect a pressure gauge (4) to filling and charging end fitting (10).

R (a6) Loosen valve nut (6) one and a half turns maximum using inner wrench (5).

R CAUTION : HOLD VALVE BODY (7) WITH OUTER WRENCH (11) DURING ALL VALVE MANOEUVRES.

R (a7) Read pressure on pressure gauge (4) and close valve with inner wrench (5).

R (a8) Compare pressure read on gauge (4) with pressure corresponding to initial shock absorber charge, taking into account the ambient temperature as per the graph.
(Ref. Fig. 606)

R (a9) Disconnect pressure gauge (4)

R (a10)Remove filling and charging end fitting (10) while holding valve nut (6) with inner wrench (5).

R (a11)Remove the two concentric wrenches (11) and (5).

R NOTE : If pressure readings are not correct, check fluid levels (Ref. 32-11-27, Servicing, paragraph 2).

R D. Close-Up

R (1) Check that lockwire (8) is in correct condition.

R (2) Install plugs (3) and (2) onto corresponding valves
R using bushed end wrench 167600/78.

R (3) Carry out a leak test to detect possible nitrogen lea-
R kage (Product No.117).

R (4) Making certain that working area is clean and clear of
R tools and miscellaneous items of equipment. Make cer-
R tain that no trace of hydraulic fluid remains.

R (5) Install side shroud (1).

R (a) Install two centre screws. Torque to between 0.9
R and 1.1 m.daN (79.623 and 97.317lbf.in.).

R (b) Install two forward and aft screws. Torque to bet-
R ween 0.4 and 0.5 m.daN (35.388 and 44.235lbf.in.).

R (c) Safety screws with lockwire (Ref. 20-21-13).

4. Check of Two Stage Main Shock Absorber Pressure With Aircraft in its Wheels

A. Equipment and Materials

DESCRIPTION	PART NO.
Metal Rule, at least 600mm (24 in.).	
7/16" Socket Spanner.	
Set of Concentric Tube Wrenches and Extension Tube	C47845
Wrench - Bushed End	167600/78
Air Hydraulic Test Set	
Leak Detector Fluid (Ref. 20-30-00, No. 117).	
Lockwire Dia. 0.8 mm (0.032 in.) Corrosion Resistant Steel	

B. Prepare

(1) Remove side shroud (1), inboard on LH leg, outboard on RH leg, to gain access to filling and charging valves.

R - Upper valve (blue) : Low pressure chamber (LP).
R - Lower valve (red) : High pressure chamber (HP).

(2) Record ambient temperature or temperature of shock absorber.

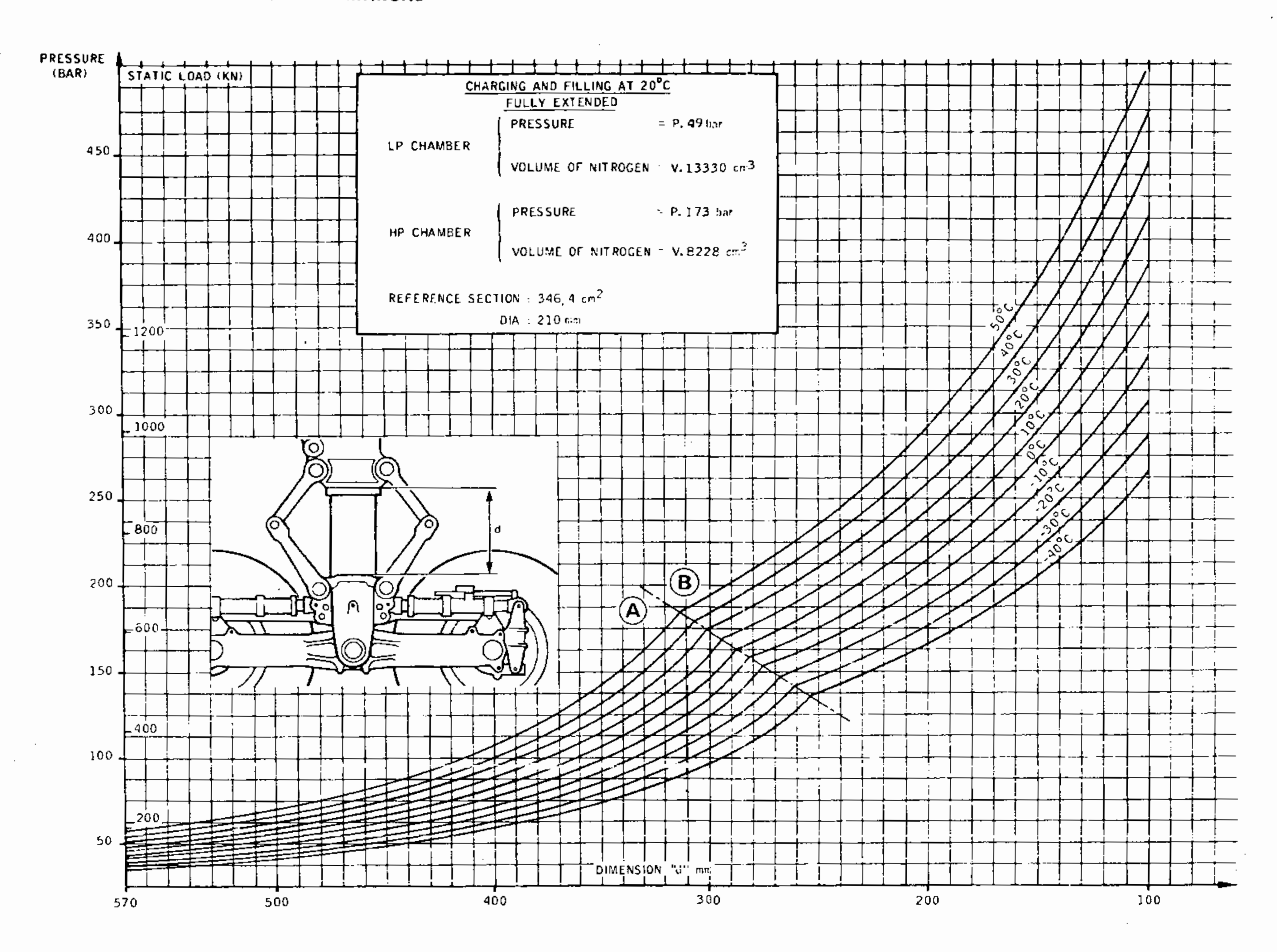
(3) Calculate load on shock absorber by :
- Using the graph (Reaction on Main Landing Gear).
R (Ref. Fig. 603, 607 and 608)
- Measuring LP chamber pressure. For reference, shock absorber section is 346.4 cm2.

NOTE : LP chamber reading is indicative of load only if d ≥ 120 mm (4.72 in.).

(4) Check that compression dimension d is correct as per graph, taking into account the load on the shock absorber and the temperature.
R (Ref. Fig.607 and 608)

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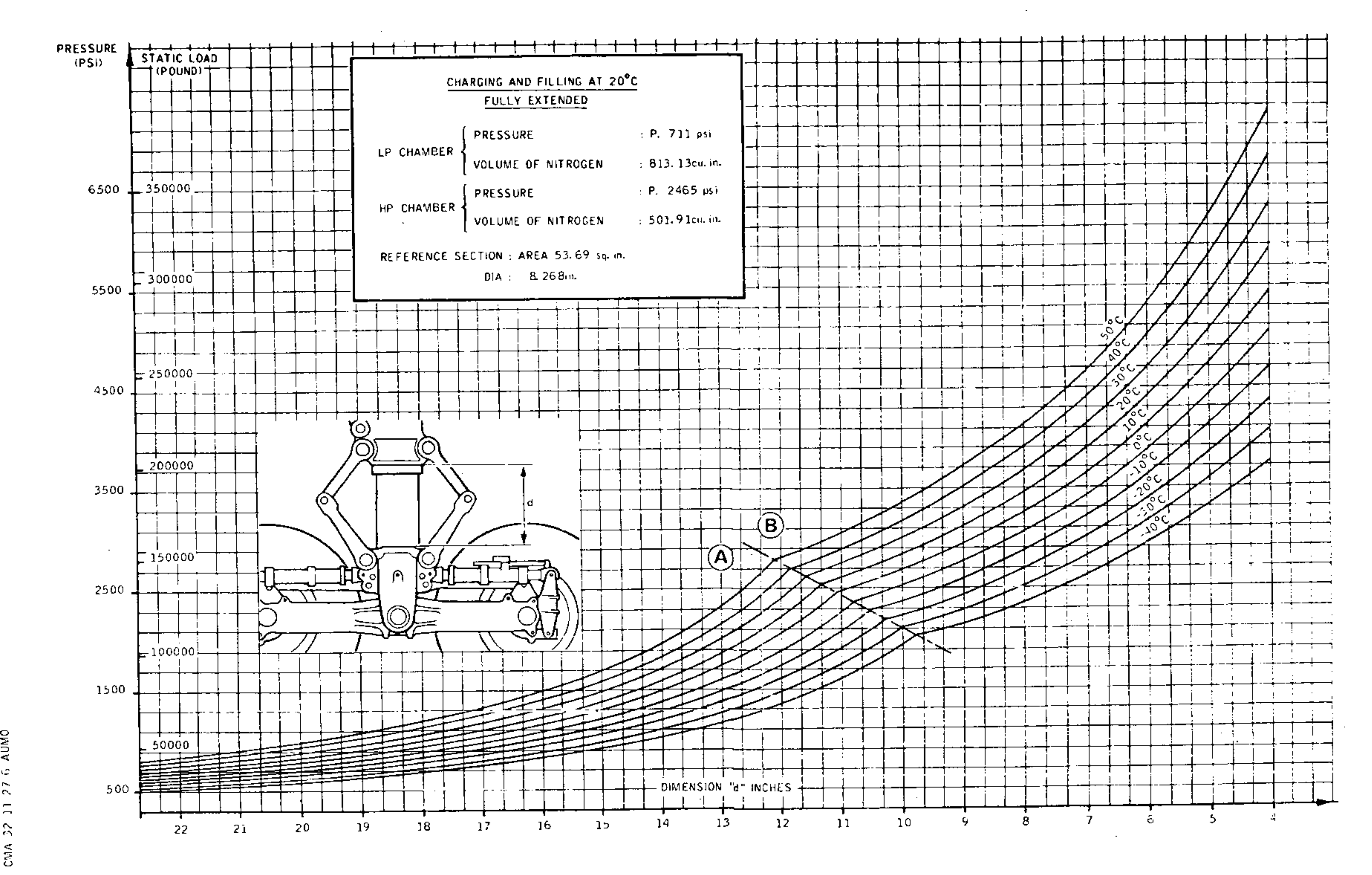
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CNA 32 11 27 6 ASMO

R

Graph of Shock Absorber Compression (Isotherms)
Figure 607



R

Graph of Shock Absorber Compression (Isotherms)
Figure 608

NOTE : Two shock absorber configurations are possible.

HP ≥ LP : Shock absorber LP chamber only is compressed (zone A on graph). Dimension d determined by LP chamber pressure.
Check that HP chamber pressure is at its nominal value of 173 bars (2465 psi) corrected as a function of ambient temperature.
(Ref. Fig. 605)

HP = BP : Both the shock absorber chambers (HP and LP) are compressed (zone B on graph).
R (Ref. Fig.607 and 608)

C. Pressure Check

(1) HP chamber pressure.
(Ref. Fig. 604)

(a) On HP filling and charging valve

(a1) Remove plug (3) using bushed end wrench 167600/78.

(a2) Make certain that seal (9) is in position on filling and charging end fitting (10) (tool C47845).

(a3) Fully screw end fitting (10) onto filling and charging valve (7).

(a4) Engage wrenches (11) and (5) (C47845) onto filling and charging valve.

NOTE : The outer wrench (11) must be in contact with all six flats of valve body (7) taking care not to catch the lockwire (8).
The inner wrench (5) must be in contact with all six flats of valve nut (6).

(a5) Connect a pressure gauge (4) to filling and charging end fitting (10).

(a6) Loosen valve nut (6) one and a half turn maximum using inner wrench (5).

CAUTION : HOLD VALVE BODY (7) WITH OUTER WRENCH (11) DURING ALL VALVE MANOEUVRES.

(a7) Read pressure on pressure gauge (4) and close valve with inner wrench (5).

(a8) Compare pressure read on gauge (4) with pressure corresponding to initial shock absorber charge, taking into account the load on the shock absorber and the temperature.
R (Ref. Fig.607 and 608)

(a9) Disconnect pressure gauge (4)

(a10) Remove filling and charging end fitting (10) while holding valve nut (6) with inner wrench (5).

(a11) Remove the two concentric wrenches (11) and (5).

(2) LP chamber pressure.

(a) On LP filling and charging valve

(a1) Remove plug (2) using bushed end wrench 167600/78.

(a2) Make certain that seal (9) is in position on filling and charging end fitting (10) (tool C 47845).

(a3) Fully screw end fitting (10) onto filling and charging valve (7).

(a4) Engage wrenches (11) and (5) (C47845) onto filling and charging valve.

NOTE : The outer wrench (11) must be in contact with all six flats of valve body (7) taking care not to catch the lockwire (8).
The inner wrench (5) must be in contact with all six flats of valve nut (6).

(a5) Connect a pressure gauge (4) onto filling and charging end fitting (10).

(a6) Loosen valve nut (6) one and a half turn maximum using inner wrench (5).

CAUTION : HOLD VALVE BODY (7) WITH OUTER WRENCH (11) DURING ALL VALVE

(a7) Read pressure on pressure gauge (4) and close valve with inner wrench (5).

(a8) Compare pressure read on gauge (4) with pressure corresponding to initial shock absorber charge, taking into account the load on the shock absorber and the temperature.
R (Ref. Fig.607 and 608)

(a9) Disconnect pressure gauge (4).

(a10) Remove filling and charging end fitting (10) while holding valve nut (6) with inner wrench (5).

(a11) Remove the two concentric wrenches (11) and (5).

NOTE : If pressure readings are not correct check fluid levels (Ref. 32-11-27,
R Servicing, paragraphs 3 and 4).

E. Close-Up

(1) Check that lockwire (8) is in correct condition.

(2) Install plugs (3) and (2) on corresponding valves using bushed end wrench 167600/78.

(3) Carry out a leak test to detect possible nitrogen leakage (Product No. 117).

(4) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(5) Install side shroud (1).

(a) Install two centre screws. Torque to between 0.9 and 1.1 m.daN (79.623 and 97.317 lbf.in.).

(b) Install two forward and aft screws. Torque to between 0.4 and 0.5 m.daN (35.388 and 44.235 lbf. in.).

(c) Safety screws with lockwire (Ref. 20-21-13).

BOGIE BEAM AND WHEEL AXLES - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A bogie beam is hinged at the base of each main landing gear shock absorber. The wheel axles are mounted in a bore at each end of the bogie beam. Two wheels are mounted on each axle, one to either side of the bogie beam. Each end of the bogie beam also includes the pitch damper attach fittings and a hemi= spherical jacking point.

2. Bogie Beam and Wheel Axle

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than R 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad-Nose	D925370000
Trolley - Main Landing Gear Ground Handling	D930704000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	

DESCRIPTION	PART NO.
R	
B Wrench - Pin	176600/78 or
B	2-32-1513-1BA
R	
Wrench - Castellated	176700/78
Extractor	253300/78
Guide Assembly	253400/78
Common Grease (Ref. 20-30-00, No.051)	
Common Grease (Ref. 20-30-00, No.058)	
Sealant (Ref. 20-30-00, No.352)	
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Check that visor is not uplocked.

(7) Display a warning notice in flight compartment prohibiting use of brakes.

(8) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE 'A' SYS CONT O/LOAD IND	1-213	G 131	S16
R	WHEEL BRAKE 'B' SYS CONT	3-213	G 132	D9

(9) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing). Depressurize Emergency brake system through valve 3661.

(10) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(11) Remove deflector (front) (Ref. 32-11-12, Removal/ Installation).

(12) Remove brake cooling fans (Ref. 32-47-12, Removal/ Installation).

(13) Remove wheels (Ref. 12-37-00).

(14) Remove brake units (Ref. 32-42-11, Removal/ Installation).

(15) Remove deflector (centre) (Ref. 32-11-13, Removal/ Installation).

(16) Disconnect pitch dampers from their hinge point on bogie beam (Ref. 32-11-31, Removal/Installation).

(17) Remove fan motors (Ref. 32-47-11, Removal/Installation)

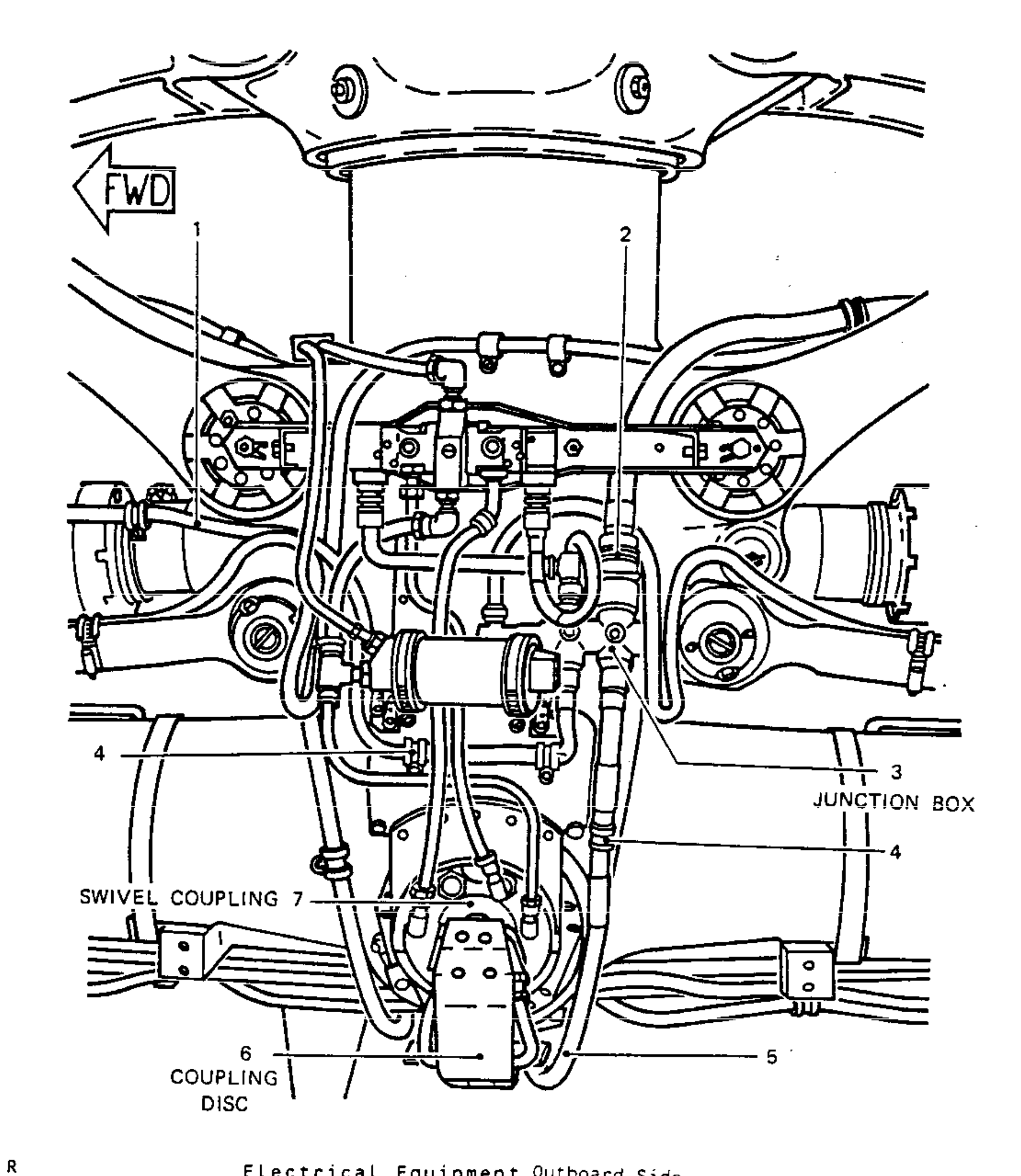
(18) Remove tachometer generators (Ref. 32-43-35, Removal/ Installation).

(19) Remove side shrouds.

C. Remove (Ref. Fig. 401, 401A, 402 and 403)

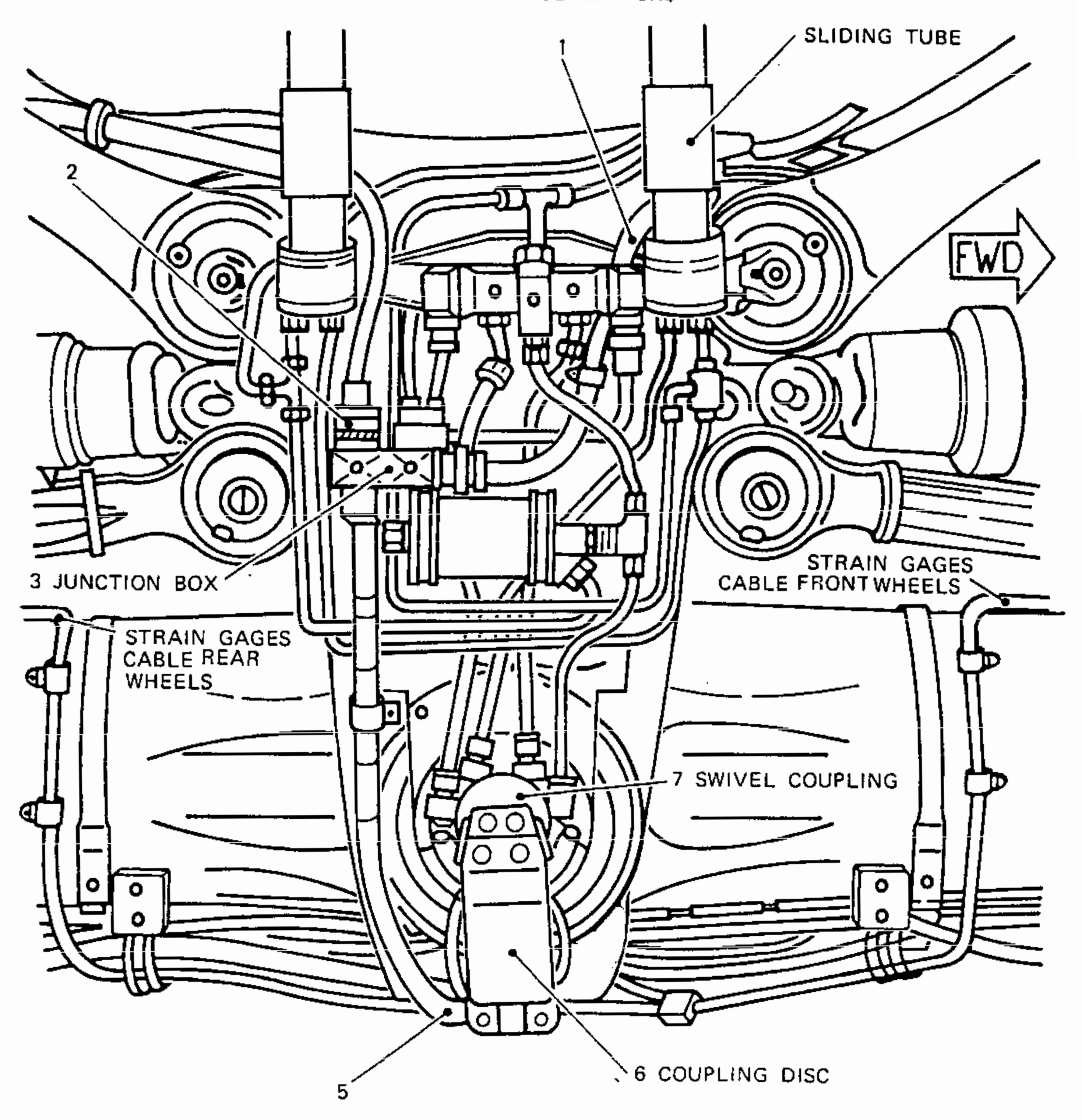
(1) Remove electrical equipment from bogie beam (Ref. Fig. 401 and 401A).

(a) From each side of main shock absorber sliding tube base, disconnect upper harness connector (2) at lower harness junction box (3).

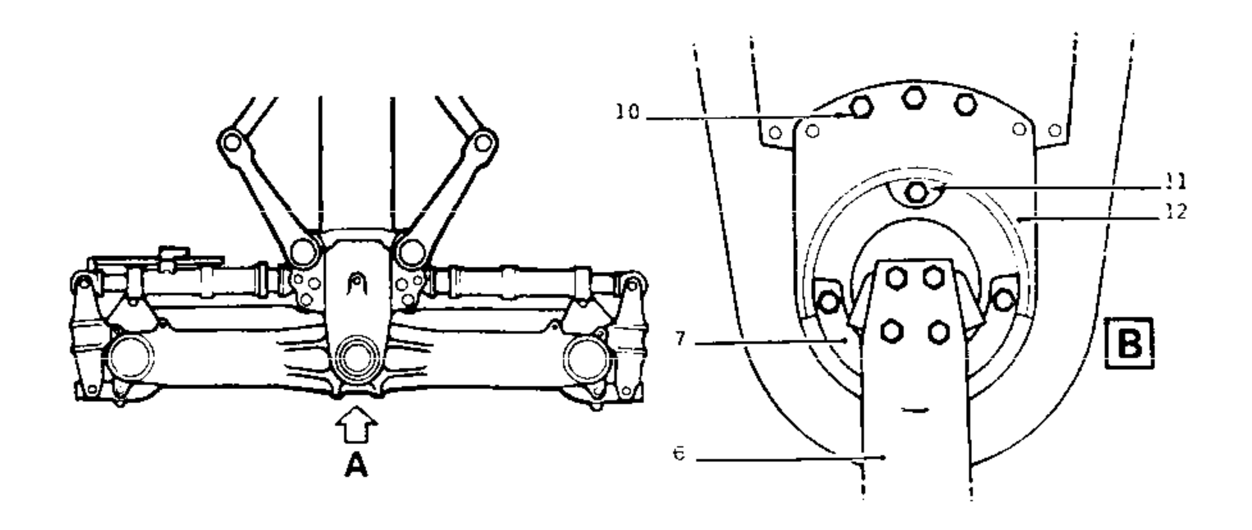


R

Electrical Equipment Outboard Side
Figure 401

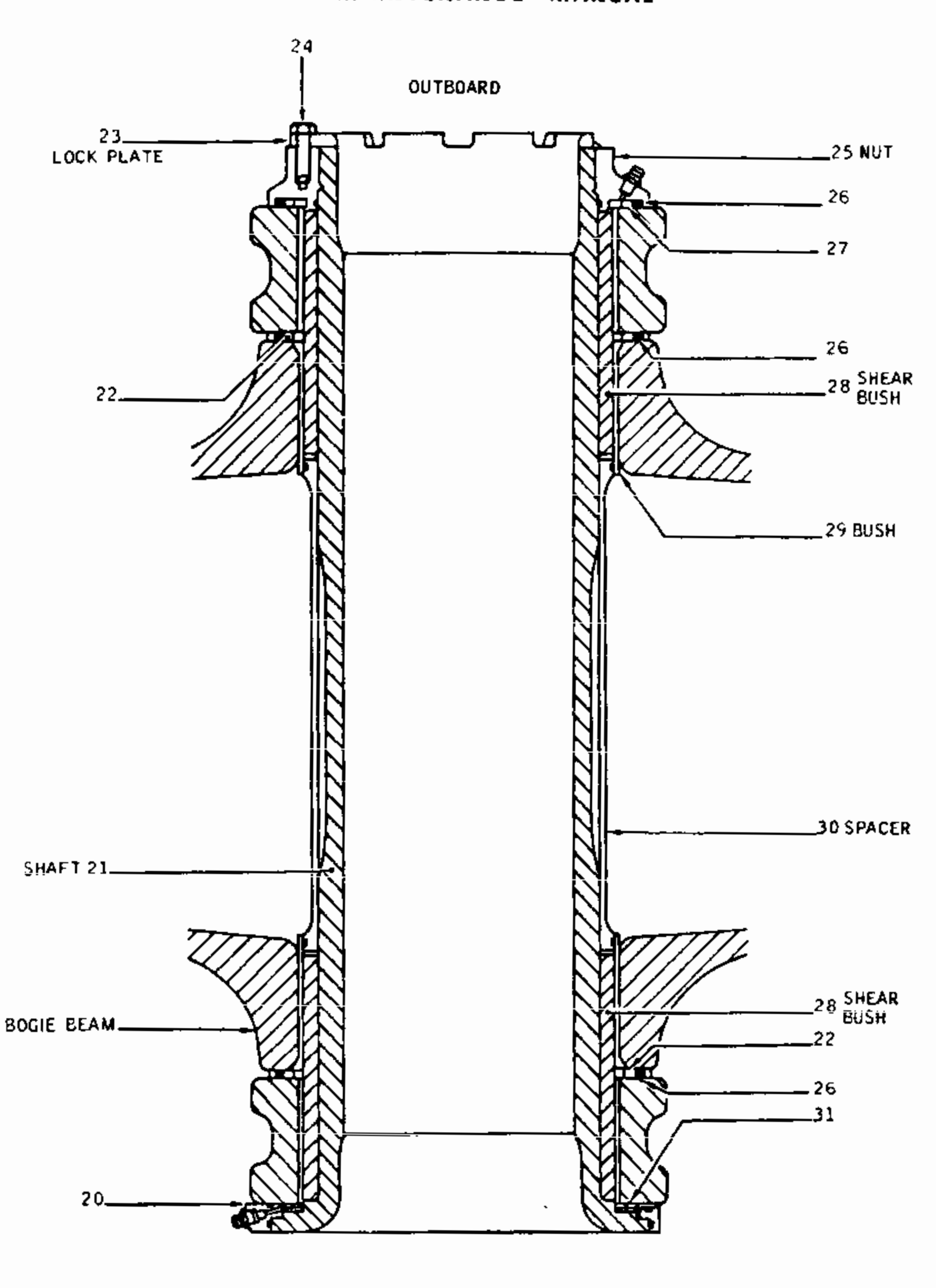


Electrical Equipment Inboard Side
Figure 401A



OUTBOARD
17
7
18
A
BOGIE BEAM
SWIVEL
COUPLING
7
INBOARD
10
11
FLANGE
12
B
6
16-15
12
14 FLANGE
RETAINER
ROD
13
CMA 32 11 28 4 ACM0

Bogie Beam Equipment
Figure 402



Bogie Beam Shaft
Figure 403

- LH leg connectors U7051 and U7053
- RH leg connectors U7052 and U7050.

(b) Disconnect servo-valve electrical supply cables.

NOTE : Supply cable (1) of forward pitch damper connector is already disconnected.

(c) Remove bogie beam harness retaining clip (4) attachment bolts.

(d) Remove harness junction box (3) attachment bolts.

(e) Fold down top of lower harnesses (5) and temporarily attach to bogie beam.

(f) Protect all cable ends.

(2) Remove bogie beam shaft equipment.
R (Ref. Fig.401,401A, and 402)

(a) Remove coupling discs (6) and remove two swivel couplings (7) from brake system (Ref. 32-43-64, Removal/Installation).

NOTE : The bolts (11) attaching these swivel couplings also attach flanges (12). Discard lock plates.

(b) On each face of bogie beam, remove upper bolts (10 and 17) attaching the flanges (12) forming recesses for swivel couplings.

(c) Remove cotter pin and remove nut (15). Retain washer (16) for reinstallation and withdraw flange retainer rod (14).

(d) Remove the two flanges (12) and retain for reinstallation

- Thrust washer (13) on inboard side
- Shim (18) on outboard side.

(3) Position trolley D930704000.

(4) Remove bogie beam shaft (Ref. Fig. 403)

(a) Remove sealing bead on contact area between nut (25) and end of shaft.

(b) Cut lockwire and remove attachment screws (24)

from two nut lock plates (23).
Remove lock plates.

(c) Remove nut (25) from bogie beam shaft using pin wrench 176600/78 and castellated wrench 176700/78.

(d) Withdraw thrust washer (27) and seal washer (26).

(e) Install extractor 253300/78 on shaft and remove shaft (21) together with shear bushes (28) and spacer (30).

WARNING : BOGIE BEAM ASSEMBLY WEIGHS ABOUT 230 kgs (507 lbs).

(f) Remove bogie beam installed on trolley D930704000 and retain thrust washers (22) and seal washers (26) for reinstallation.

(g) From shaft/extractor 25330/78.

(g1) Withdraw grease ring (20) and thrust washer (31).

(g2) Remove extractor 25330/78.

(g3) Remove shear bushes (28) and spacer (30).

NOTE : If bogie beam is removed to replace main shock absorber, refit shaft to removed shock absorber ; replacement shock absorber includes its own shaft.

D. Preparation of Replacement Component (Ref. Fig. 403)

(1) Clean and grease (Product No.051) all parts removed and check that they are in correct condition. In particular check chrome plating on pins for correct condition.

(2) Check thickness of washers (31) (27), th : 3.5 mm min. (0.138 in.) and washers (22), th : 3.4 mm min. (0.134 in.). Replace if necessary.

(3) Apply product No.058 over about 1 cm (0.40 in.) of bronze bogie beam bushes (29) inside protruding portion

(4) Place replacement component on trolley D930704000.

R E. Install (Ref. Fig. 401, 401A, 402 and 403)

(1) Install bogie beam shaft (Ref. Fig. 403)

(a) Prepare shaft assembly with guide 253400/78.

(a1) Slide grease ring (20) with its seals over bogie beam shaft (21) until it thrusts against shoulder.

(a2) Slide on thrust washer (31).

(a3) Grease shaft and shear bushes (28) with Product No.051.

(a4) Install two shear bushes on shaft with spacer (30) fitted with its seals.

(a5) Insert guide 253400/78 into this assembly.

(b) Position bogie beam below shock absorber sliding tube and align inserting a side thrust washer (22) and seal washer (26) on each face of bogie beam.

(c) Engage shaft assembly guide 253400/78.

<u>NOTE</u> : Head of shaft must be installed facing inboard.
Remove guide 253400/78.

(d) Screw on nut (25) and its seal inserting a thrust washer (27) and seal ring (26) using pin wrench 176600/78 and castellated wrench 176700/78. Tighten nut and install two lock plates (23).

(e) Secure lock plates with screws (24). Wirelock screws (24) to each other (Ref. 20-21-13).

(f) Check free movement of bogie beam.

(g) Apply a bead of sealant (Product No.352) to seal off end of shaft and nut.

(h) Check for presence of grease nipple on grease ring (20) and nut (25).

(2) Remove trolley D930704000.

(3) Install bogie beam shaft equipment.
R (Ref. Fig.401, 401A, and 402)

(a) Install two flanges (12) forming recesses for

swivel couplings (7) adding :

- Thrust washer (13) under inboard flange
- Shim (18) under outboard flange.

(b) Attach top of each flange to accumulator mounting plate with bolts and protective washers.

- Inboard flange bolt (10).
- Outboard flange bolt (17) also attaching shim (18).

(c) Insert flange retainer rod (14), secure with nut (15) and protective washer (16), safety nut with a cotter pin.

(d) Install swivel couplings (7) with their coupling discs (6) (Ref. 32-43-64, Removal/Installation).

NOTE : Bolts (11), attaching swivel couplings, also attach flanges (12).

(e) Connect swivel coupling hoses only after attaching lower harnesses.

R (4) Install bogie beam electrical equipment (Ref. Fig. 401 and 401A).

(a) Lift top of each bogie beam (5) harness and position wiring.

(b) Attach each harness to its junction box (3) with bolts and protective washers.

(c) Attach harness retaining clips (4).

(d) Connect servo-valve supply cables.

(e) Connect upper harness connectors (2) on junction boxes (3).

(f) Safety connectors with lockwire (Ref. 20-21-13).

NOTE : After attaching harness, complete swivel coupling (7) hose installation.

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(6) Install side shrouds using screws and washers. Upper screws : torque to between 0.4 and 0.5 m.daN (35

and 44 lbf in).
Lower screws : torque to between 0.9 and 1.1 mdaN (80 and 90 lbf in).

(7) Safety screws with lockwire (Ref. 20-21-13).

(8) Install tachometer with lockwire (Ref. 32-43-35, Removal/Installation).

(9) Install fan motors (Ref. 32-47-11, Removal/Installation.

(10) Connect pitch dampers to their hinge points on bogie beam (Ref. 32-11-31, Removal/Installation).

(11) Check adjustment of main gear bogie beam aligned microswitch (Ref. 32-31-92, Removal/Installation).

(12) Install brake units (Ref. 32-42-11, Removal/Installation).

(13) Install deflector (centre) (Ref. 32-11-13, Removal/Installation).

(14) Install wheels (Ref. 12-37-00).

(15) Install brake cooling fans (Ref. 32-47-12, Removal/Installation).

RB

(16) Install deflector (front) (Ref. 32-11-12, Removal/Installation).

(17) Remove safety clips and tags and reset circuit breakers.

(18) Bleed Normal braking system (Ref. 32-43-00, Servicing).

(19) Bleed Emergency braking system (Ref. 32-44-00, Servicing).

(20) Grease hinge points (Ref. 12-22-32).

RB (21) Carry out self check of flat tyre deflation system in
RB accordance with 32-48-00, Adjustment/Test.

RB (22) Carry out check of brake torque arm strain gauges in
RB accordance with 32-43-00, Adjustment/Test.

F. Tests

(1) Carry out a Normal landing gear retraction and extension (Ref. 32-31-00, Adjustment/Test).

(2) Perform a system self-test on flat tyre detection system (Ref. 32-48-00, Adjustment/Test).

B (3) Perform a tachometer generator functional test
B (Ref. 32-43-35, Adjustment/Test).

(4) Perform a brakes temp indicator test (Ref. 32-43-00, Adjustment/Test para. 2.G.) to verify correct electrical connection of the brake temperature monitoring system.

E. Close-Up

(1) Make certain that area under aircraft is clear.

(2) Remove safety stay.

(3) Lower aircraft onto its wheels.

MAIN GEAR TORQUE LINK - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

An upper and lower torque link is fitted to the front and rear of each main landing gear leg. The upper torque links are attached to the base of the landing gear leg. The lower torque links are attached to the base of the shock absorber sliding tube. A swivel joint connects the upper and lower torque links. The torque links are designed to keep the main gear bogie beams parallel with the aricraft centreline.

2. Main Gear Torque Link

A. Equipment and Materials

DESCRIPTION	PART NO.
Lifting Jack, Lifting Capability Greater than 81600 daN (183621 lbf) Spec. M.F.P.	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter-LH	D921185000
Balanding Device - Pyramid Adapter-RH	D921485001
Pyramid Adapter - Lifting - LH	D924008000
Pyramid Adapter - Lifting - RH	D924008001
Safety Stay	

**ON A/C ALL

DESCRIPTION	PART NO.
R B Wrench - Tenoned	154500/78 or
R B	2-32-1508-1BA
**ON A/C ALL	
Wrench - Maintaining Socket	254600/78
Extractor	D46070
Guide - Assembly	254800/78
Common Grease (Ref. 20-30-00, No.051)	
Sealant (Ref. 20-30-00, No.352)	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	

B. Prepare (Ref. Fig. 401)

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

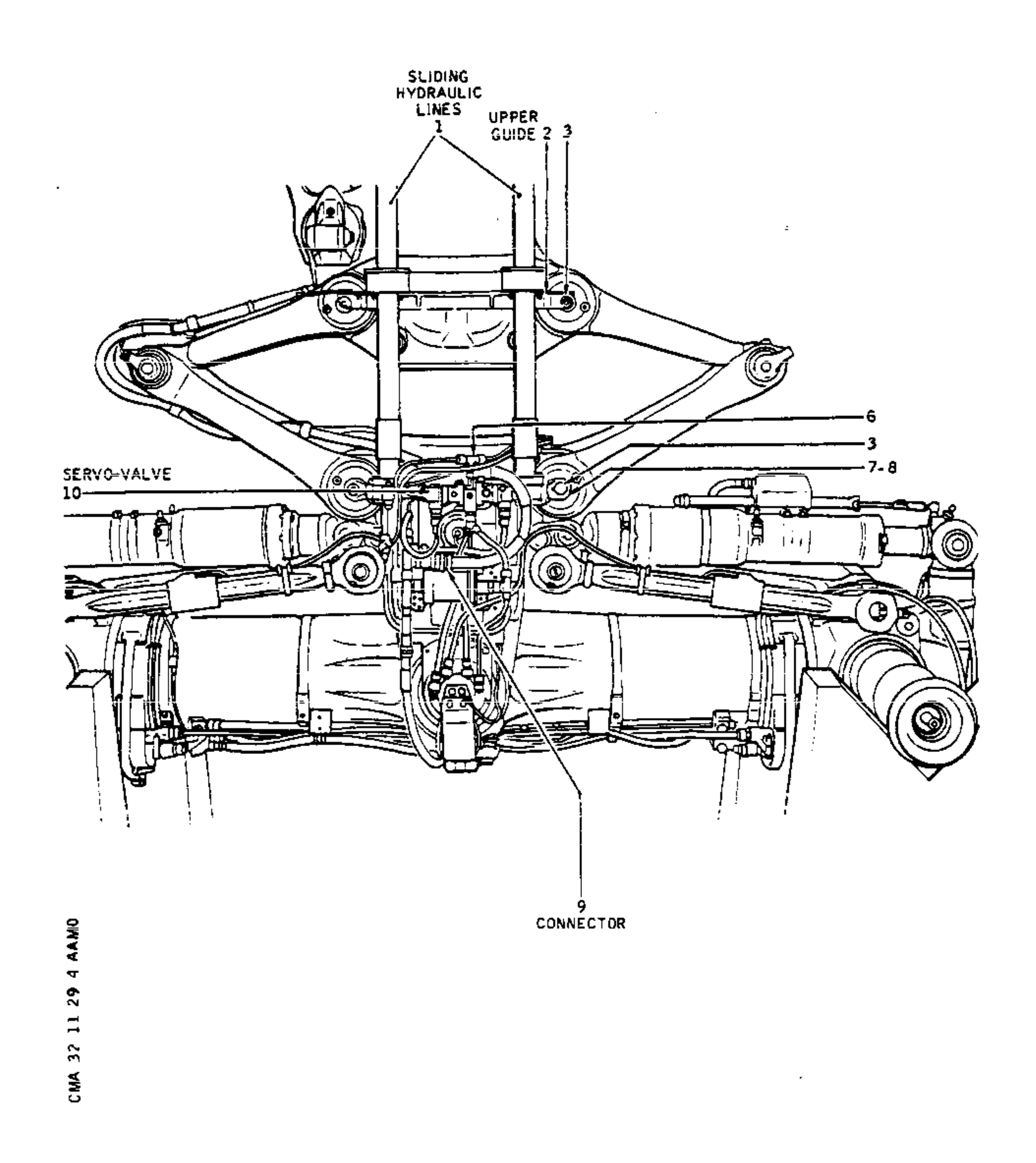
(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) In flight compartment, display a warning notice prohibiting operation of brakes.

(7) Trip, safety and tag the following circuit breakers :

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Removal Preparation
Figure 401

R

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R WHEEL BRAKE "B" SYS CONT	3-213	G 132	D9

(8) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(9) Depressurize the Green and Yellow hydraulic systems. (Ref. 29-11-00, Servicing and 29-21-00, Servicing). Open door 151DB and depressurize Emergency brake system through valve 3661.

(10) Remove side covers.

(11) On inboard side of landing gear remove assembly consisting of :

- The two sliding hydraulic lines (1)
- The hydraulic line upper guides (2)
- The lower support (7) also forming the servo-valve support with their baseplate.

To remove assembly : Fold back tab of lock washer and remove screw (3), discard lock washer.

NOTE : Forward servo-valve (10) shall be removed to gain access to one of the support central mounting screws (Ref. 32-43-63, Removal/ Installation).

Cap all open line ends.

(12) Disconnect servo-valve baseplate and brake system accumulator intercommunication line (6).

(13) Disconnect the other hydraulic lines adjacent to underside of the baseplate and under the sliding lines.

(14) Cap all open line ends.

(15) On each side of landing gear, disconnect connector (9) of upper harness at lower harness junction box.

- Left leg - connectors U7051 and U7053.
- Right leg - connectors U7052 and U7050.

(16) Release electrical wiring clamps on torque link, free wiring from torque link and secure to gear leg. Mark wiring position for installation.

C. Remove (Ref. Fig.401 and 402)

(1) On outboard side of landing gear, remove servo-valve support.

- Fold back tab of lock washer and remove screw (3) discard lock washer.
- remove servo-valve support

(2) Remove torque link lower pin

(a) Remove sealing bead from external spacer (28).

(b) Cut lockwire and remove screws (20) from nut locking device (21). Remove locking device.

(c) Remove torque link pin nut (22) using wrenches 254500/78 and 254600/78.

(d) Retain sealing washer (23) and thrust washer (24) for reinstallation.

(e) Drive out pin (32) ; using extractor D46070.

(f) Retain sealing washers (23) set rings (25) and external spacer (28) for reinstallation.

(3) Remove upper pin

(a) Procedure for removal of upper pin is identical with that for lower pin.
It should be noted that :

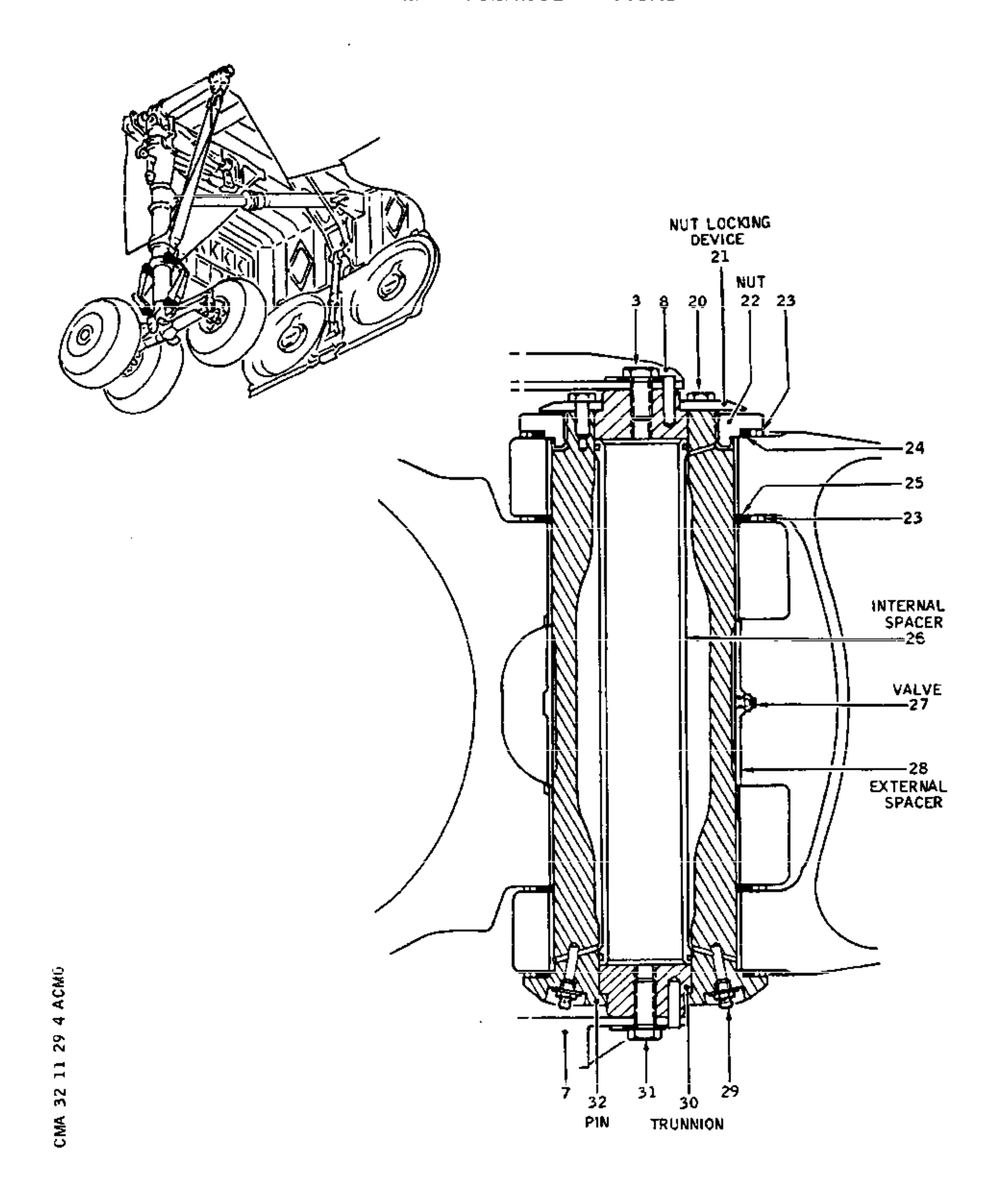
- the upper pin and its external spacer are longer
- there is only one trunnion (30) in place of two on the lower joint.

(b) Remove torque link.

NOTE : Each torque link weighs approximately 45kg (100 lb).

D. Preparation of Replacement Component (Ref. Fig. 402)

(1) On removed torque link, remove supports and attachment clamps for electrical wiring and install on new torque link.



Torque Link Pin
Figure 402

(2) Clean bronze rings on torque link, landing gear leg and shock absorber sliding tube, grease with product No.051

(3) Make certain that valve (27) is present on external spacer (28).

(4) Make certain that internal spacer (26) is on each pin.

(5) Check that bronze washers (23) (24) (25) are in good condition, and of minimum thickness 2.5 mm (0.1 in). Replace if necessary.

(6) Make certain that all other parts are in good condition, in particular the chromed portion of the pins.

E. Install (Ref. Fig.401 and 402)

(1) Install lower pin.

(a) Place and centre external spacer (28) in shock absorber integral fork-fitting.

(b) On each side of fork-fitting position a set ring (25) together with a sealing washer (23). Position torque link and engage lower section.

(c) On torque link pin (32) position thrust washer (24) together with a sealing washer (23) under head.

(d) Insert pin, using tool 254800/78.

NOTE : The pin head is located on inboard side, towards fuselage.

(e) Install thrust washer (24), sealing washer (23) and nut (22).

NOTE : Bring nut into contact, tighten to maximum torque of 0.5 m.daN (44 lbf.in.), ensuring correct hinge movement.

(f) Install nut locking device (21).

(g) Secure nut locking device (21) by means of screws (20).

Torque screws to between 0.4 and 0.5 m.daN (35 and 44 lbf.in.). Wirelock screws in pairs.

(h) Make certain that the two grease nipples (29) to-

gether with red identification washers are in position on pin head.

(j) Apply a bead of product No.352 on the two contact surfaces of external spacer (28).

(2) Install upper pin.

(a) Fold torque link and line-up bogie beam to enable upper link to be positioned on gear leg attachment fitting.

(b) Installation of upper pin is carried out in the same manner as for lower pin.

NOTE : There is only one trunnion (30); inboard side.

(3) On outboard side of landing gear, install servo-valve support (8), a new lock washer and screw (3).

(4) Connect intercommunication lines (6) adjacent to servo-valve baseplate.

(5) Connect lines adjacent to underside of baseplate.

(6) Install sliding lines (1), lower support (7), upper guide (2), a new lock washer and screw (3).

(7) Install forward servo-valve (10) (Ref. 32-43-63, Removal/Installation).

(8) Install electrical wiring according to reference marks made during removal.
Secure wiring by means of clamps and supports provided.

(9) Connect each upper harness connector on lower harness junction box.
Wirelock connectors.

F. Tests

(1) Check wheel alignment, (Ref. 32-11-00 Inspection/Check) adjust if necessary (Ref. 32-11-29 Adjustment/Test).

G. Close-Up

(1) Remove safety clips and tags and reset circuit breakers and remove warning notice.

(2) Bleed Normal braking system (Ref. 32-43-00,

Servicing).

(3) Bleed Emergency braking system (Ref. 32-44-00, Servicing).

(4) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(5) Install side covers.
Upper screws : Torque to between 0.4 and 0.5 m.daN (35 and 44 lbf.in.).
Lower screws : Torque to between 0.9 and 1.1 m.daN (80 and 98 lbf.in.).

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR.

(6) Remove safety stay.

(7) Lower aircraft onto its wheels.

MAIN GEAR TORQUE LINK - ADJUSTMENT TEST

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Wheel alignment after removal of a torque link, shock absorber or bogie beam.

B. Take-up of play in torque link.

2. Wheel Alignment

A. Equipment and Materials

	DESCRIPTION	PART NO.
	Jack, Lifting Capability Greater than 81600 daN (183621 lbf) Spec M.F.P.	07-10-0001
	Safety Jack Adapter	D920113200
	Jacking Pad-Nose	D925370000
R	Balancing Device - Pyramid Adapter - LH	D921485000
R	Balancing Device - Pyramid Adapter - RH	D921485001
	Pyramid Adapter - Lifting - LH	D924008000
	Pyramid Adapter - Lifting - RH	D924008001
	Safety Stay	
	Control Equipment-Main Landing Gear Parallelism	E920145000
	Tool - Pre-Centering	180800/78
	Plumb-Line	D921621000
	Grease (Ref. 20-30-00, No.051)	
	Grease (Ref. 20-30-00, No.059)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Under fuselage, install plumb-line D921621000 at points U and C and draw aircraft centreline on the ground.

(7) Check wheel alignment (Ref. 32-11-00, Inspection/Check)

C. Adjust (Ref. Fig.501 and 502)

(1) Method of Alignment (Ref. Fig. 501)

Adjustment consists of the angular displacement of the bogie-beam/shock absorber assembly with respect to the gear leg axis, by changing over an equal number of shim washers from one side of both torque link ball joints on the same landing gear leg to the other but in opposite directions.

When the shock absorber is extended, the ratio of distances d and D is approximately 1/2.
The changeover of a washer of 0.5 mm (0.02 in.) thickness at the ball joint at each torque link on the same landing gear leg corrects an alignment error of 1 mm (0.04 in.).

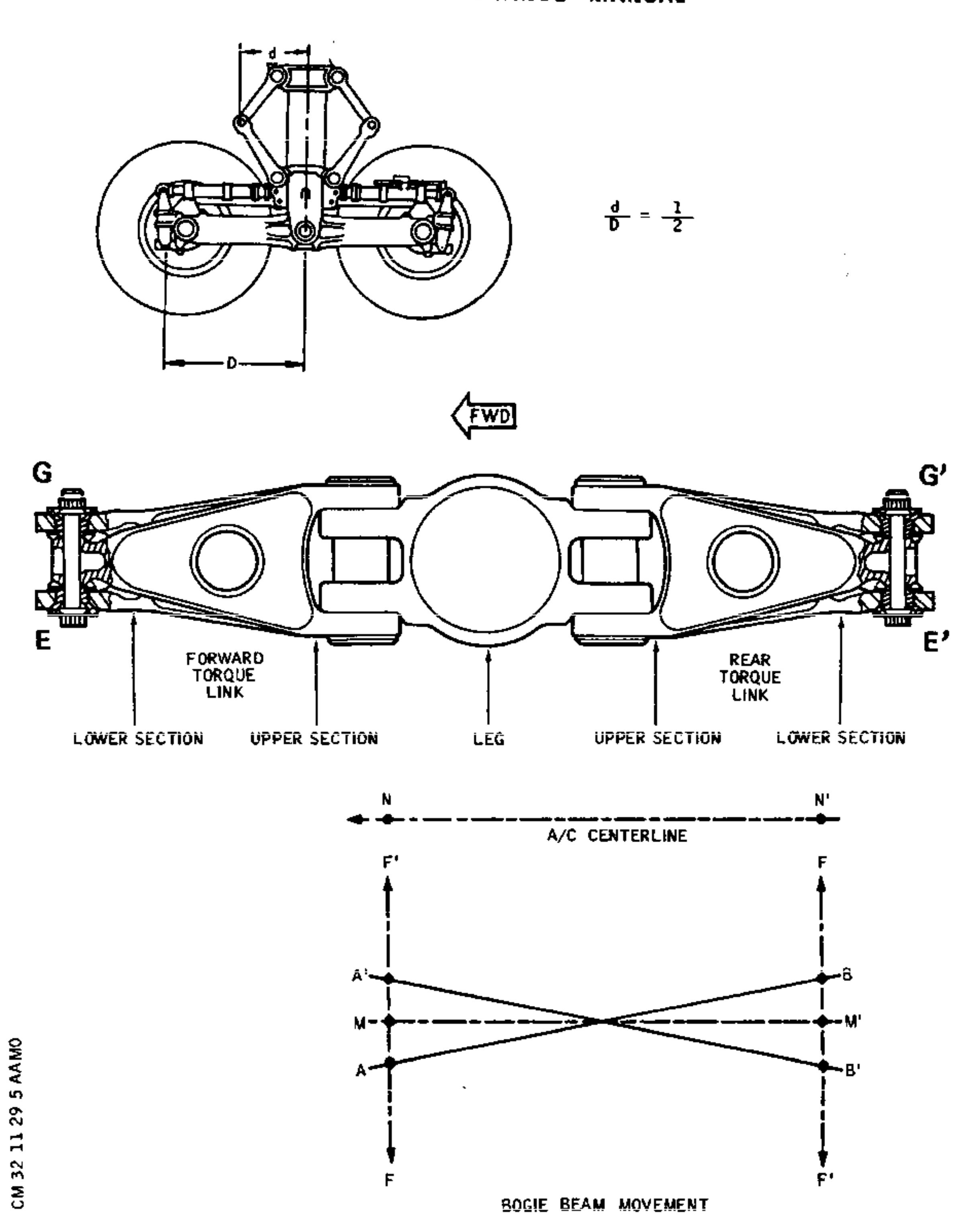
(2) Procedure (Ref. Fig. 502)

(a) Disassemble ball joint of forward torque link.

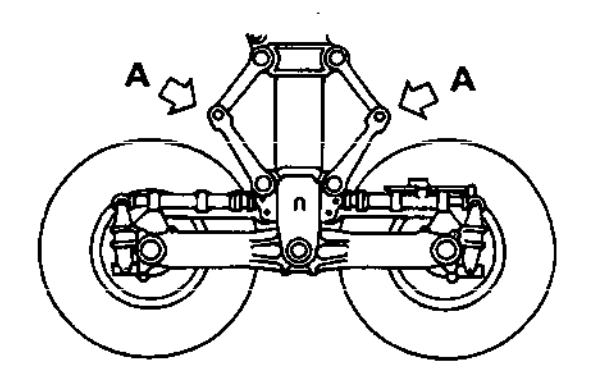
(a1) Remove electrical wiring which might impede operations.

(a2) Remove split pin and remove nuts (3).

(a3) Remove cotter pins and remove bolts (1), nut locking devices (4) and spacers (2).



Wheel Alignment
Figure 501



A

14
1
2
3
13 HEMISPHERICAL WASHER
H
4
5 BOLT
12
11 CENTERING BUSHING
10
9 SHIM WASHERS
8 CUP
7 BALL JOINT
6

CM 32 11 29 5 ACM0

Center Ball Joint
Figure 502

(a4) Remove nut (13) and bolt (5).

NOTE : This bolt may have a shim washer (6) under head.

(a5) Retain hemispherical washers (12) and mark their positions for reinstallation.

(a6) Remove centring bushings (11) and retain thrust washers (10) for reinstallation.

R (a7) Raise torque link upper section, remove cups (8) together with stack of shim washers (9).

CAUTION : MARK RESPECTIVE POSITIONS OF CUP-WASHER ASSEMBLIES.

R (b) Disassemble rear torque link ball joint.

R Procedure for removal of rear torque link ball joint is identical with that for forward torque link.

(c) Adjust (Ref. Fig. 501)

(c1) If bogie beam is converging forwards, that is MN smaller than M'N' :

- Remove required thickness of washers from stack G of forward torque link, bearing in mind that the alignment error correction is double this thickness.
- Install these washers on stack E.
- Conversely, on rear torque link remove similar thickness of washers from stack E' and install them on stack G'.

(c2) If bogie beam is diverging forwards, that is MN greater than M'N' :

- Remove required thickness of washers from stack E and install them on stack G.
- Conversely, on rear torque link, remove similar thickness of washers from stack G' and install them on stack E'.

R (d) Assemble Ball Joints (Ref. Fig. 502)

(d1) Check that seatings (14) are fitted to torque link lower section.

R (d2) Apply product No.059 to ball joint (7) cups (8) and hemispherical bearings (12), then grease these parts using product No.051.

(d3) Install cups (8) in their respective posi=
R tions on ball joint and position torque link upper section.

(d4) Install stacks of shim washers (9) in their respective positions and centre by means of pre-centring tool 180800/78.

(d5) Engage centring bushings (11) together with associated thrust washers (10).

(d6) Install hemispherical bearings (12) and install bolt (5) with shim washer (6) under head.

NOTE : Bolt head shall be at outboard side.

(d7) Install nut (13).
Torque 0.8 to 1.0 m.daN (70 to 88 lbf.in.).
Check that bolt projects from nut by 2.7 to 3.7 mm (0.11 to 0.15 in.) (dimension H).
If this dimension is out of tolerance, add or remove shim washers (6) under bolt head.

(d8) Install nut locking device (4) at each end of centre pin, together with spacer (2) and secure assembly by bolt (1) and nut (3).
Install cotter pin on nut (3).

D. Close-Up

(1) Install electrical wiring on torque link.

R (2) Grease ball joints (Product No. 051).

(3) Remove tools and equipment.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR.

(4) Remove safety stay.

(5) Lower aircraft on to its wheels.

3. Take-Up of Play in Torque Link

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter - LH	D921485000
Balancing Device - Pyramid Adapter - RH	D921485001
Safety Stay	
Control Equipment - Main Landing Gear Parallelism	E920145000
Plumb-line	D921621000
Tool - Pre-Centering	180800/78
Dynamometer 50 daN (110 lbf)	
Grease (Ref. 20-30-00, No.051)	
Grease (Ref. 20-30-00, No.059)	

R B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Under fuselage install plumb-line D921621000 at points U and C and draw aircraft centreline on ground.

(7) Check torque link play (Ref. 32-11-00, Inspection/ Check).

C. Play Take-Up (Ref. Fig.501 and 502)

(1) Method of Play Take-Up

Take-up consists of the addition of a similar thickness of shim washers at each side of the ball joint.
R If total play at ball joint is J, shims of thickness
R J/2 are added at each side of ball joint.

(2) Mode of Operation (Ref. Fig.501 and 502)

(a) On each torque link, remove bolt (5).

(a1) Remove electrical wiring which might impede operations.

(a2) Remove cotter pins and remove nuts (3).

(a3) Remove bolts (1), nut locking devices (4) and spacers (2).

(a4) Remove nut (13), remove bolt (5).

NOTE : This bolt may have a shim washer (6) under the head.

(a5) Retain hemispherical washers (12) and mark their positions for reinstallation.

(a6) Remove centring bushings (11) and retain their thrust washers (10) for reinstallation.

(a7) In direction F', apply a force of 50 ± 5 daN (110 ± 11 lbf) at end of bogie beam and measure play J at point G between seating (14) and shim washers (9).
On the other torque link note similar play J at point E'.
Choose two shim washers (9) of thickness J/2.

(a8) Install a shim washer at each side of ball joint and centre stack by means of pre-centring tool 180800/78.

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(a9) Install centring bushings (11) together with thrust washers (10).

(a10) Again check total play by applying the force at bogie beam end.
Play must not exceed 0.1 mm (0.004 in.).

(a11) Apply product No.059 to hemispherical washer (12) bearing surfaces, then grease with product No.051.

(a12) Install hemispherical washers (12) install bolt (5) with shim washer (6) under head.

NOTE : Bolt head shall be at outboard side.

(a13) Screw and tighten nut (13).
Torque 0.8 to 1.0 m.daN (70 to 88 lbf.in.).
Check that bolt projects from nut by 2.7 to 3.7 mm (0.11 to 0.15 in.) (dimension H).
If this dimension is out of tolerance add or remove shim washers (6) under bolt head.

(a14) Install nut locking device (4) at each end of centre pin, together with spacer (2) and secure assembly by bolt (1) and nut (3).
Install cotter pin on nut (3).

D. Close-Up

(1) Install electrical wiring on torque link.

R (2) Grease ball joint (Product No. 051).

(3) Remove tools and equipment.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR.

(4) Remove safety stay.

(5) Lower aircraft on to its wheels.

PITCH DAMPER (TYPE I) - SERVICING

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

   A. Replenishing of fluid chamber CH1 and topping up of fluid chambers CH2, CH3 and CH4. These operations shall be carried out with the pitch damper removed from landing gear leg.

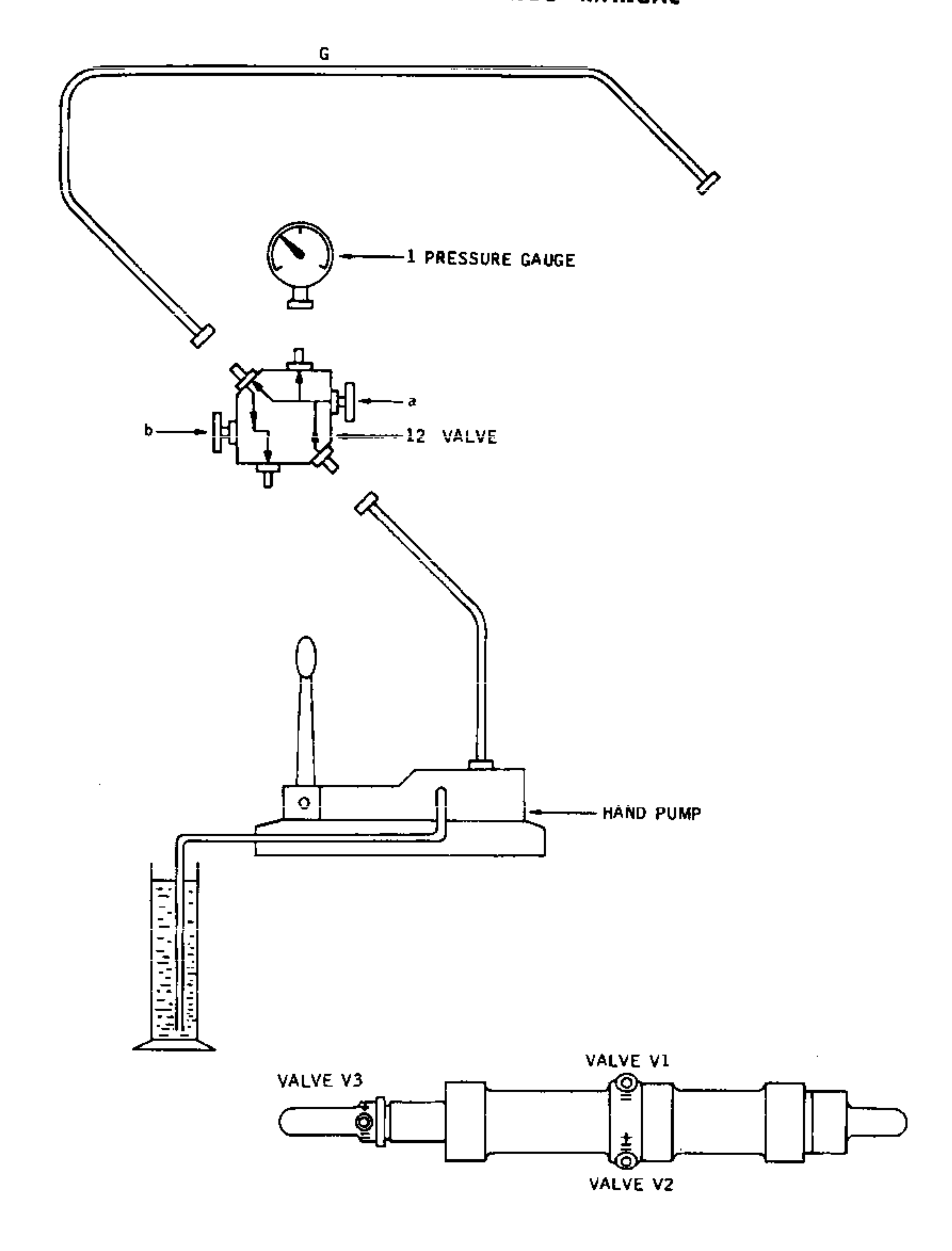
   B. Charging of nitrogen chambers after replenishing or after nitrogen pressure check of chambers CH2, CH3 and CH4. This operation can be carried out with the aircraft on its wheels or on jacks.

2. Replenishing - Topping Up with Hydraulic Fluid and Charging With Nitrogen
(Ref. Fig. 301, 302 and 303)

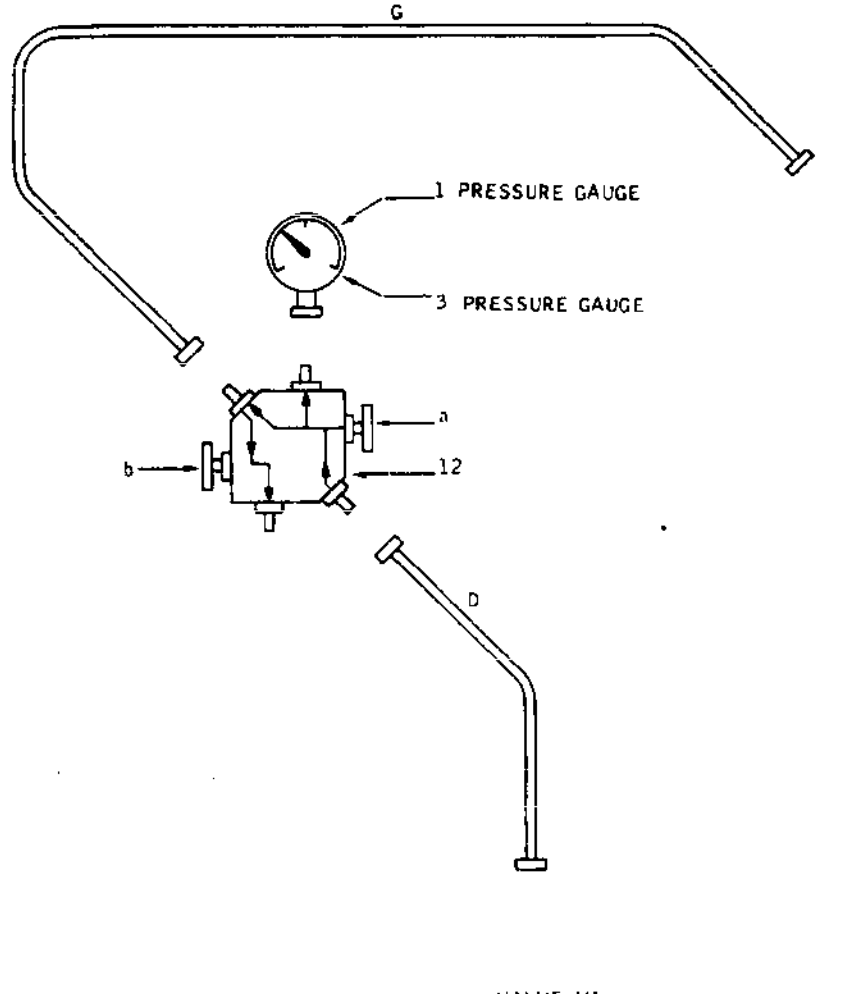
   CAUTION : PITCH DAMPER SHALL BE REPLENISHED WITH HYDRAULIC FLUID PRODUCT No.012.

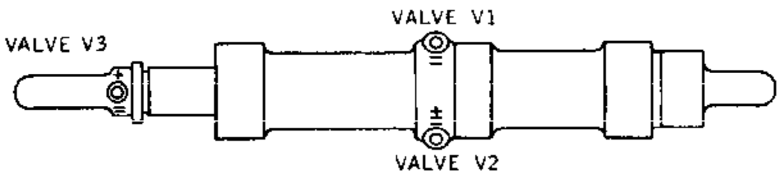
   A. Equipment and Materials

DESCRIPTION	PART NO.
Wrench - Bushed End	167600/78
Set of Concentric Tube Wrenches And Extension Tube	C47845
Air/Hydraulic Tool Kit	
Compressed Nitrogen Supply with Pressure Regulator	
Graduated Flask ; 1 Litre (61 in³)	
Container	
Lockwire 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	
Hydraulic Fluid (Ref. 20-30-00, No.012)	



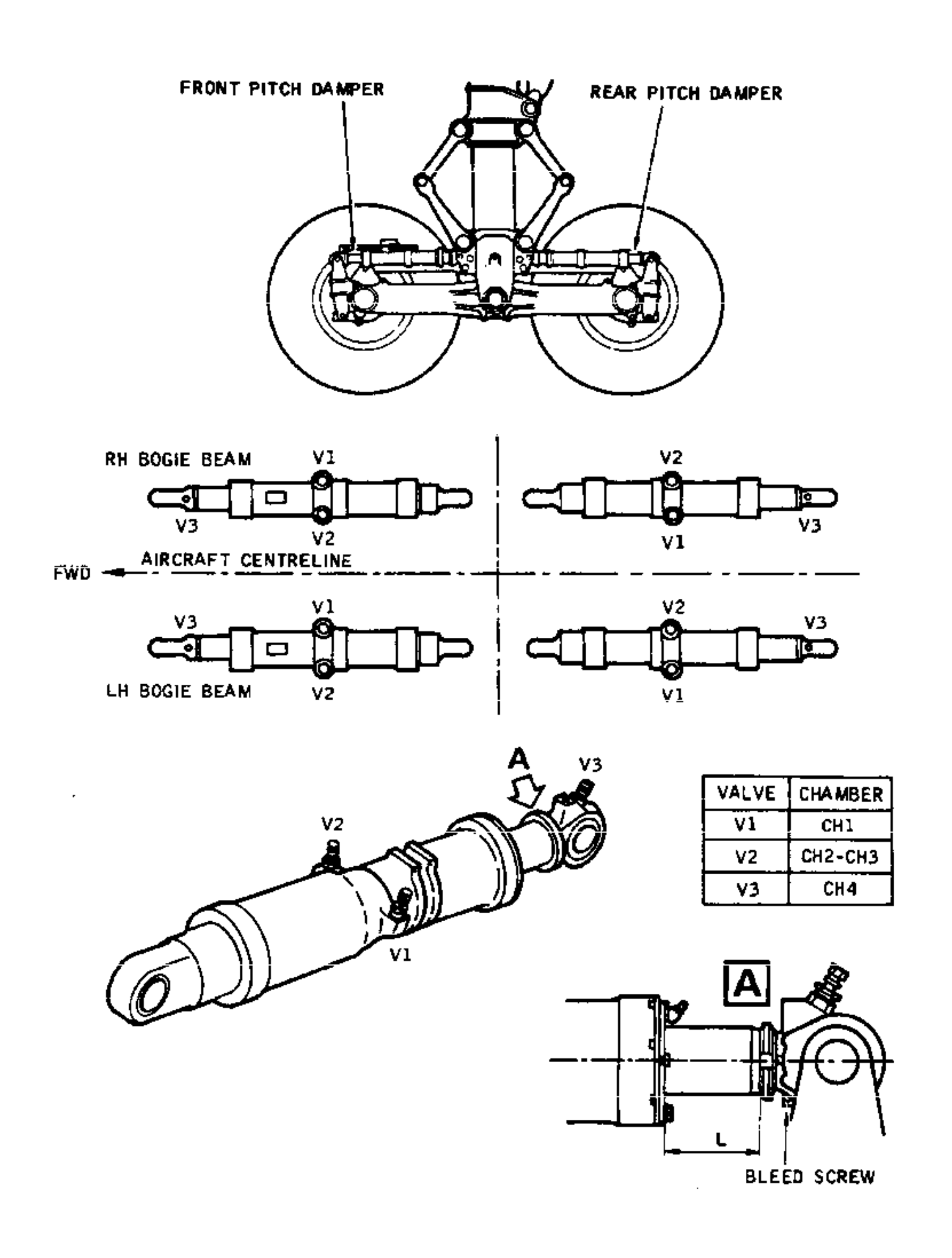
Pitch Damper - Replenishing
Figure 301







Pitch Damper - Charging
Figure 302



VALVE	CHAMBER
V1	CH1
V2	CH2-CH3
V3	CH4

Pitch Damper Arrangement
Figure 303

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment.

(4) Disconnect brake torque arms at shock absorber (Ref. 32-11-32, Removal/Installation).

(5) Remove pitch damper (Ref. 32-11-31, Removal/Installation).

WARNING : RELIEVE PITCH DAMPER NITROGEN CHAMBER PRESSURE BEFORE REMOVAL.

(6) Prepare a replenishing system then a charging system using components from air/hydraulic tool kit.

NOTE : Indexes of replenishing then charging system components correspond with those shown in the air/hydraulic tool kit.

C. Drain Pitch Damper

(1) Remove caps from the three valves.

(2) Make certain that nitrogen chambers are no longer pressurized (Valves V2 and V3 open)

(3) Drain completely chambers CH2, CH3 and CH4.

D. Replenishing of Fluid Chamber CH1

(1) Hold pitch damper vertical with sliding tube fully extended and bleed screw upwards.

(2) Through valve V3 charge chamber CH4 to 20 bars (290 psi).

(3) Cut and remove lockwire. Remove bleed screw.

(4) Connect hand pump to valve V1.

(5) Replenish chamber CH1 until fluid flows from bleed port.

(6) Wait 15 minutes to allow fluid to settle then top-up.

(7) Provisionally install bleed screw.

(8) Close valve V1.

E. Top-Up Expansion Chamber CH4

(1) Open valve V3 to relieve pressure from expansion chamber.

(2) Connect hand pump to valve V3. Pump 3cm³ (0.2 in³) of fluid into the expansion chamber.

(3) Disconnect hand pump and install charging tool.

(4) Charge chamber CH4 to 10 bars (145 psi).

(5) Through valve V1 inject 49 cm³ (3 in³) of hydraulic fluid into chamber CH1.

NOTE : Pump the fluid into a graduated flask and remove bleed screw to allow fluid to settle.

(6) Check on charging tool pressure gauge that pressure is approximately 16 bars (232 psi).

The 49 cm³ (3 in³) of fluid injected into chamber CH1 causes the expansion piston to rise thus increasing pressure in chamber CH4.

(7) Make certain that bleed screw seal is in correct condition. Install bleed screw and safety with lockwire.

(8) Close valve V1.

(9) Relieve pressure from chamber CH4 and close valve V3.

F. Stabilization of Intercommunicating Nitrogen Chambers CH2, CH3

NOTE : Balanced volume in chambers CH2, CH3 is achieved through a level of hydraulic fluid. This fluid also serves to lubricate the pistons.

(1) Place pitch damper in horizontal position with valves V1 and V2 facing vertically upwards.

(2) Through valve V2 charge chambers CH2 and CH3 to a pressure of 20 bars (290 psi).

NOTE : This procedure moves pitch damper sliding tube to neutral position.

(3) Close valve V2.

(4) Connect hand pump to valve V2.

(5) Pump approximately 300 cm^3 (18 in^3) of hydraulic fluid through valve V2.

(6) Wait 15 minutes to allow fluid to settle.

(7) Close valve V2.

(8) Disconnect hand pump. Connect one end of a flexible hose to valve V2 and place other end in container.

(9) Slowly open valve V2 to drain off surplus fluid and completely discharge nitrogen pressure.

NOTE : The fluid level stabilizes at the lower opening of valve V2, connected to chamber CH2 (and by intercommunication to chamber CH3).

(10) Close valve V2.

(11) Install all valve caps.

G. Close-Up

(1) Install pitch damper (Ref. 32-11-31, Removal/Installation).

(2) Charge pitch damper (Ref. paragraph 3 or 4).

(3) Connect brake torque arms at shock absorber (Ref. 32-11-32, Removal/Installation).

(4) Remove warning notice from flight compartment.

3. Charging of Pitch Damper with Aircraft on Jacks
(Ref. Fig.302 and 303)
(Ref. Fig.304 and 305)

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater Than 183621 lbf (81600 daN)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramidal Adapter Lifting LH	D921485000
Balancing Device - Pyramidal Adapter Lifting RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Rule 0 - 200 mm (0 - 7.87 in.)	
Thermometer - 40 to + 40°C	
Air/Hydraulic Tool Kit	
Compressed Nitrogen Supply; Minimum Pressure 150 bars(2175 psi) with Pressure Regulator	
Wrench - Bushed End	167600-78
Set of Concentric Tube Wrenches and Extension Tube	C47845

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

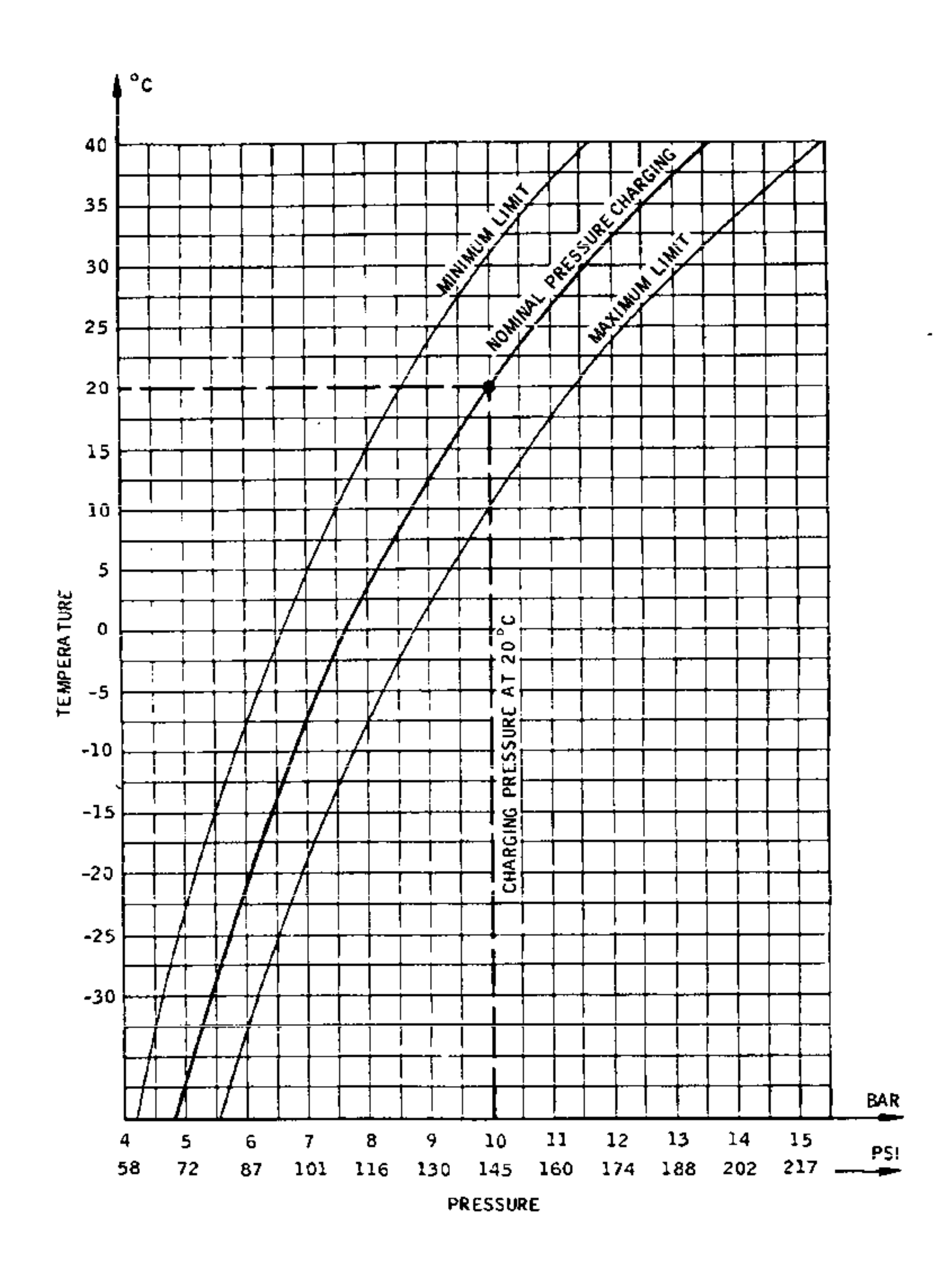
(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL posi-

Printed in England

TEMPERATURE
OC
-40 -30 -20 -10 0 10 20 30 40
mm
COMPRESSION EXPANSION
DIMENSION 'L'
120 110 100 90 80 70 60 50 40 30
NEUTRAL L=78mm (3.070in)
MINIMUM LIMIT
NOMINAL PRESSURE
MAXIMUM LIMIT
PRESSURE CHAMBERS CH2-CH3
60 70 80 90 100 110 120 130 140 150 160 170
870 1160 1450 1740 2030
PSI
BAR

CMA 32 11 31 3 AGMO

Pitch Damper Charging of Chambers CH2, CH3
Figure 304



Pitch Damper Charging of Chamber CH4
Figure 305

tion.

(3) Display warning notice in flight compartment.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Prepare a charging system using components from air/ hydraulic tool kit.

NOTE : Indexes of charging system components correspond with those shown in air/hydraulic tool kit.

C. Charging

NOTE : The charging pressures indicated on pitch damper placards adjacent to the valves are nominal values, that is for an ambient temperature of 20°C and with sliding tube in neutral position.

Intercommunicating chambers CH2 and CH3 (valve V2) nitrogen pressure : 100 bars (1450 psi).

Expansion chamber CH4 (valve V3) nitrogen pressure : 10 bars (145 psi).

NOTE : The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and temperature.

The temperature in chamber CH4 is a function of temperature only.

(1) Charging of intercommunicating chambers CH2 and CH3

(a) Make certain that bogie beam is in neutral position. L = 78 mm (3.070 in)

(b) Note ambient temperature as near as possible to pitch damper.

(c) Mark value L = 78 mm (3.070 in.) on horizontal scale and from this point draw a vertical to the point of intersection with ambient temperature isotherm.

(d) From this draw a horizontal through the nominal pressure curve.

(e) From this point draw a vertical through the ho-

rizontal pressure scale.

(f) Note pressure.

(g) On charging valve V2, remove valve cap.

(h) Install wrenches C47845.

(i) Connect charging tool.

(j) Open valve and charge to previously noted pressure.

(k) Close valve and remove charging tools.

(l) Install valve cap.

(2) Charging of expansion chamber CH4

(a) Note ambient temperature as near as possible to pitch damper.

(b) Mark this value on vertical temperature scale.

(c) From this point draw a horizontal through the nominal pressure curve.

(d) From this point draw a vertical through the horizontal pressure scale.

(e) Note pressure.

(f) On charging valve V3, remove valve cap.

(g) Install wrenches C47845.

(h) Connect charging tool.

(i) Open valve and charge to previously noted pressure.

(j) Close valve and remove charging tools.

(k) Install valve cap.

D. Close-Up

(1) Remove safety stay.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR.

(2) Lower aircraft onto its wheels.

(3) Remove warning notice from flight compartment.

4. Charging of Pitch Damper with Aircraft on its Wheels
(Ref. Fig.302 and 303)
(Ref. Fig.304 and 305)

A. Equipment and Materials

DESCRIPTION	PART NO.
Rule 0 - 200 mm (0 - 7.87 in.)	
Thermometer - 40 to + 40°C	
Air/Hydraulic Tool Kit	
Compressed Nitrogen Supply; Minimum Pressure 150 bars (2175 psi) With Pressure Regulator	
Wrench - Bushed End	167600-78
Set of Concentric Tube Wrenches And Extension Tube	C47845

B. Prepare

(1) Prepare a charging system using components from air/hydraulic tool kit.

NOTE : Indexes of charging system components correspond with those shown in air/hydraulic tool kit.

C. Charging

NOTE : The charging pressures indicated on pitch damper placards adjacent to the valves are nominal values, that is, for an ambient temperature of 20°C and with sliding tube in neutral position.

Intercommunicating chambers CH2 and CH3 (valve V2) nitrogen pressure 100 bars (1450 psi).

Expansion chamber CH4 (valve V3) nitrogen pressure 10 bars (145 psi).

NOTE : The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and the temperature.

The temperature in expansion chamber CH4 is a function of the temperature only.

(1) Charging of intercommunicating chambers CH2 and CH3

(a) Measure sliding tube remaining stroke (dimension L).

(b) Note ambient temperature as near as possible to pitch damper.

(c) Mark value L on horizontal scale and from this point draw a vertical to the point of intersection with the ambient temperature isotherm.

(d) From this point draw a horizontal through the nominal pressure curve.

(e) From this point draw a vertical through horizontal pressure scale.

(f) Note pressure.

(g) On charging valve V2, remove valve cap.

(h) Install wrenches C47845.

(i) Connect charging tool.

(j) Open valve and charge to previously noted pressure.

(k) Close valve and remove charging tools.

(l) Install valve cap.

(2) Charging of Expansion Chamber CH4

(a) Note ambient temperature as near as possible to pitch damper.

(b) Mark this value on vertical temperature scale.

(c) From this point draw a horizontal through nominal pressure scale.

(d) From this point draw a vertical through horizontal pressure scale.

(e) Note pressure.

(f) On charging valve V3, remove valve cap.

(g) Install wrenches C47845.

(h) Connect charging tool.

(i) Open charging valve and charge to previously noted pressure.

(j) Close valve and remove charging tools.

(k) Install valve cap.

D. Close-Up

Not applicable

PITCH DAMPER (TYPE II) = SERVICING)

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Replenishing of fluid chamber CH1 and topping up of fluid chambers CH2, CH3 and CH4. These operations shall be carried out with the pitch damper removed from landing gear leg.

B. Charging of nitrogen chambers after replenishing or after nitrogen pressure check of chambers CH2, CH3 and CH4. This operation can be carried out with the aircraft on its wheels or on jacks.

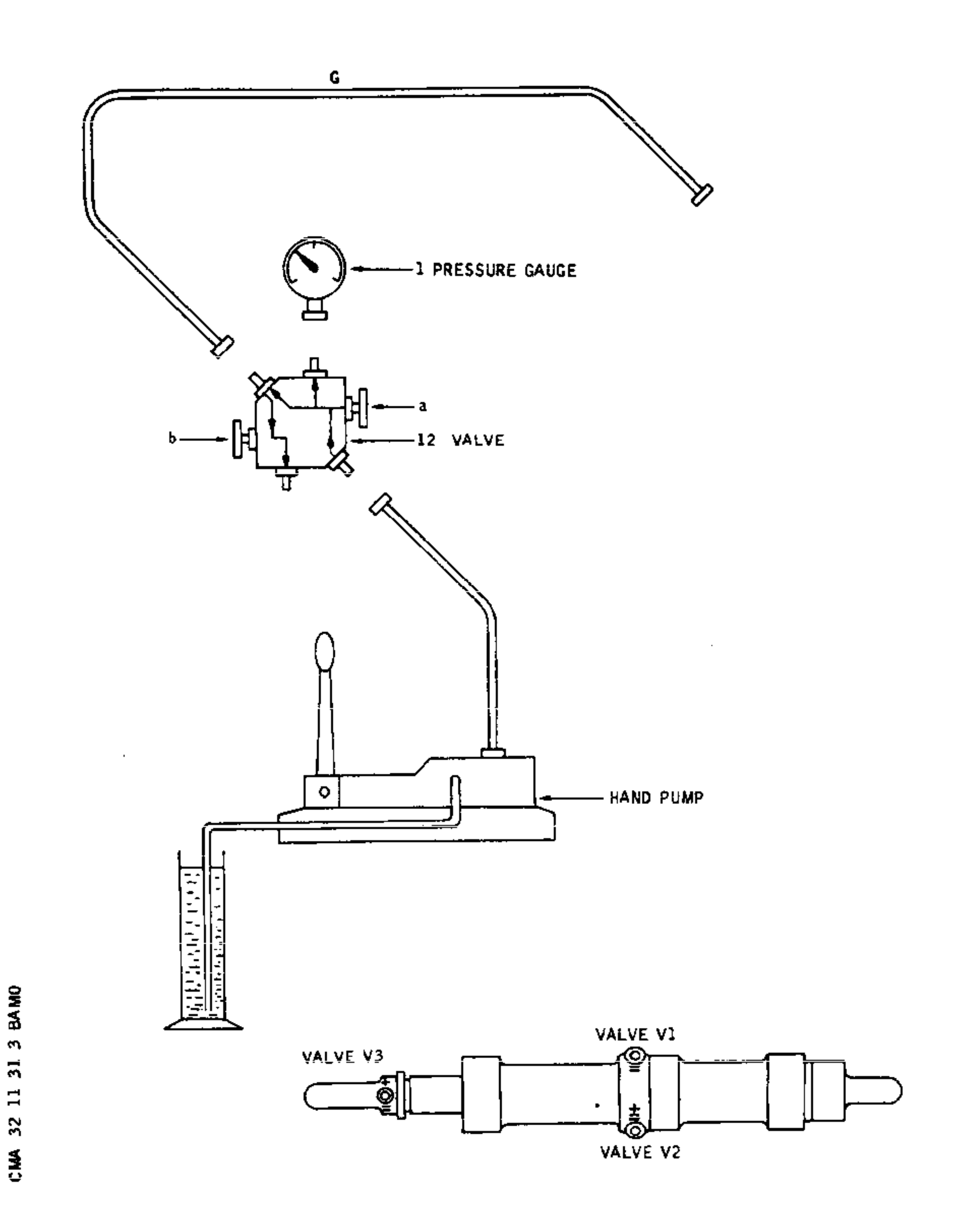
2. Replenishing - Topping Up with Hydraulic Fluid and Charging With Nitrogen (Ref. Fig. 301, 302 and 303)

CAUTION : PITCH DAMPER SHALL BE REPLENISHED WITH HYDRAULIC FLUID PRODUCT No.012.

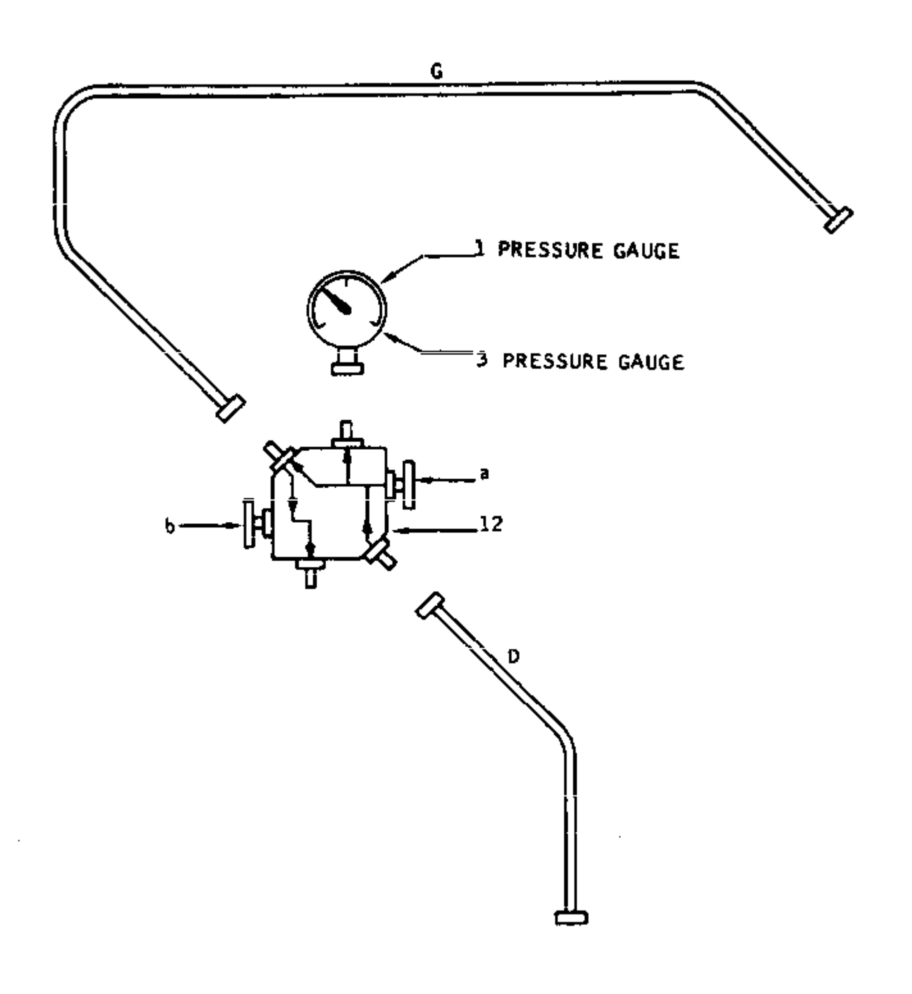
A. Equipment and Materials

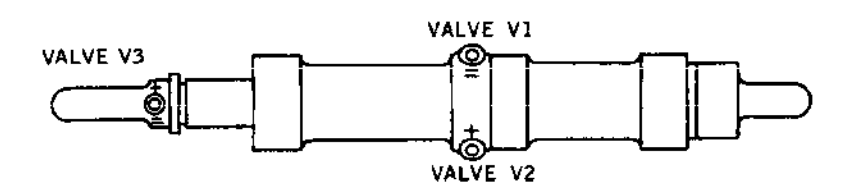
DESCRIPTION	PART NO.
Wrench - Bushed End	167600/78
Set of Concentric Tube Wrenches And Extension Tube	C47845
Air/Hydraulic Tool Kit	
Compressed Nitrogen Supply with Pressure Regulator	
Graduated Flask ; 1 Litre (61 in³)	
Container	
Hydraulic Fluid (Ref. 20-30-00, No.012)	

B. Prepare



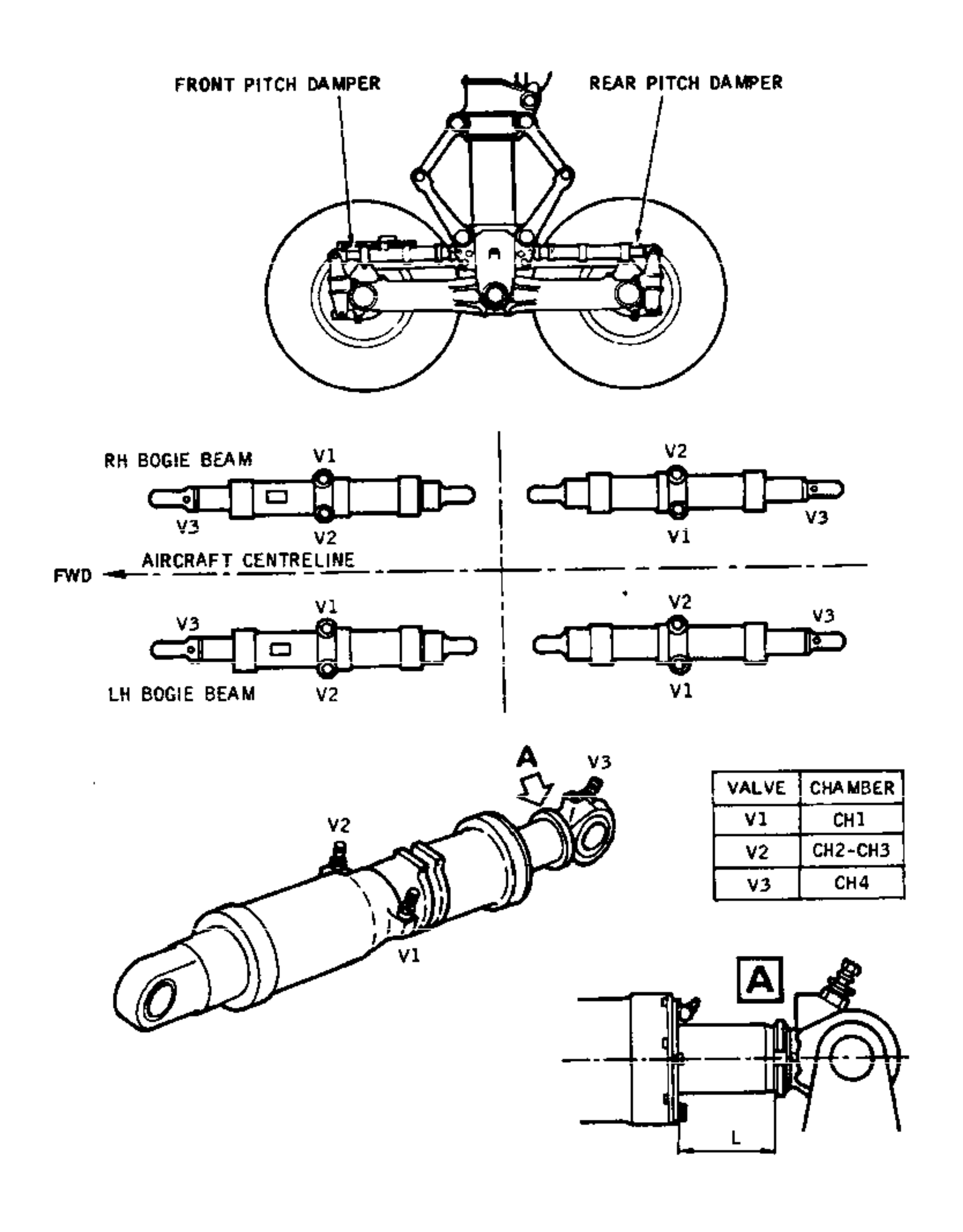
Pitch Damper - Replenishing
Figure 301





CMA 32 11 31 3 BCM0

Pitch Damper - Charging
Figure 302



VALVE	CHAMBER
V1	CH1
V2	CH2-CH3
V3	CH4

CMA 32 11 31 3 BEMO

Pitch Damper Arrangement
Figure 303

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment.

(4) Disconnect brake torque arms at shock absorber (Ref. 32-11-32, Removal/Installation).

(5) Remove pitch damper (Ref. 32-11-31, Removal/Installation).

WARNING : RELIEVE PITCH DAMPER NITROGEN CHAMBER PRESSURE BEFORE REMOVAL.

(6) Prepare a replenishing system then a charging system using components from air/hydraulic tool kit.

NOTE : Indexes of replenishing then charging system components correspond with those shown in the air/hydraulic tool kit.

C. Drain Pitch Damper

(1) Remove caps from the three valves.

(2) Make certain that nitrogen chambers are no longer pressurized (Valves V2 and V3 open)

(3) Drain completely chambers CH2, CH3 and CH4.

D. Replenishing of Fluid Chamber CH1

(1) Hold pitch damper vertical with sliding tube fully extended and valve V3 downwards.

(2) Make certain that valve V3 is open.

(3) Connect hand pump to valve V1.

(4) Fill chamber CH1. Bleed from time to time to release air that collects in upper part of chamber.

NOTE : Pump fluid into a graduated flask to avoid the introduction of air bubbles. Allow liquid to settle after each bleed.

Sufficient fluid has been pumped into chamber

CH1 when expansion chamber CH4 separator piston comes up against stop. This is confirmed by an increase in pressure in chamber CH1.

(5) Through valve V3 charge expansion chamber with nitrogen to a pressure of 30 bars (435 psi).

(6) Very slowly open external bleed valve on hose connected to valve V1 to bleed off surplus fluid.

(7) Repeat filling and bleeding off of surplus fluid procedure until fluid is completely free of air. Chamber CH4 is still charged to 30 bars (435 psi).

E. Topping Up of Expansion Chamber CH4

(1) Through valve V3 restore chamber CH4 pressure to 8 bars (116 psi).

(2) Using hand pump connected to valve V1, add 45 cm^3 (2.75 in^3) of fluid to chamber CH1.

<u>NOTE</u> : This volume is indicated by a drop in the level of fluid in the graduated flask.

The resulting reduction in volume in chamber CH4 corresponds to a pressure increase of approximately 5.5 bars (80 psi).

(3) Restore pressure in chamber CH4 to 8 bars (116 psi).

(4) Close valve V1.

(5) Connect hand pump to valve V3 and pump 3 cm^3 (0.2 in^3) of fluid into chamber CH4.

(6) Check that pressure in chamber CH4 is still 8 (+ 0.5, - 0) bars (116 (+ 7, - 0) psi).

(7) Relieve pressure in chamber CH4 and close valve V3.

F. Stabilization of Intercommunicating Nitrogen Chambers CH2, CH3

<u>NOTE</u> : Balanced volume in chambers CH2, CH3 is achieved through a level of hydraulic fluid. This fluid also serves to lubricate the pistons.

(1) Place pitch damper in horizontal position with valves V1 and V2 facing vertically upwards.

(2) Through valve V2 charge chambers CH2 and CH3 to a pressure of 20 bars (290 psi).

NOTE : This procedure moves pitch damper sliding tube to neutral position.

(3) Close valve V2.

(4) Connect hand pump to valve V2.

(5) Pump approximately 120 cm^3 (7.3 in^3) of hydraulic fluid through valve V2.

(6) Wait 15 minutes to allow fluid to settle.

(7) Close valve V2.

(8) Disconnect hand pump. Connect one end of a flexible hose to valve V2 and place other end in container.

(9) Slowly open valve V2 to drain off surplus fluid and completely discharge nitrogen pressure.

NOTE : The fluid level stabilizes at the lower opening of valve V2, connected to chamber CH2 (and by intercommunication to chamber CH3).

(10) Close valve V2.

(11) Install all valve caps.

G. Close-Up

(1) Install pitch damper (Ref. 32-11-31, Removal/Installation).

(2) Charge pitch damper (Ref. paragraph 3 or 4).

(3) Connect brake torque arms at shock absorber (Ref. 32-11-32, Removal/Installation).

(4) Remove warning notice from flight compartment.

3. Charging of Pitch Damper with Aircraft on Jacks
(Ref. Fig.302 and 303)
(Ref. Fig.304 and 305)

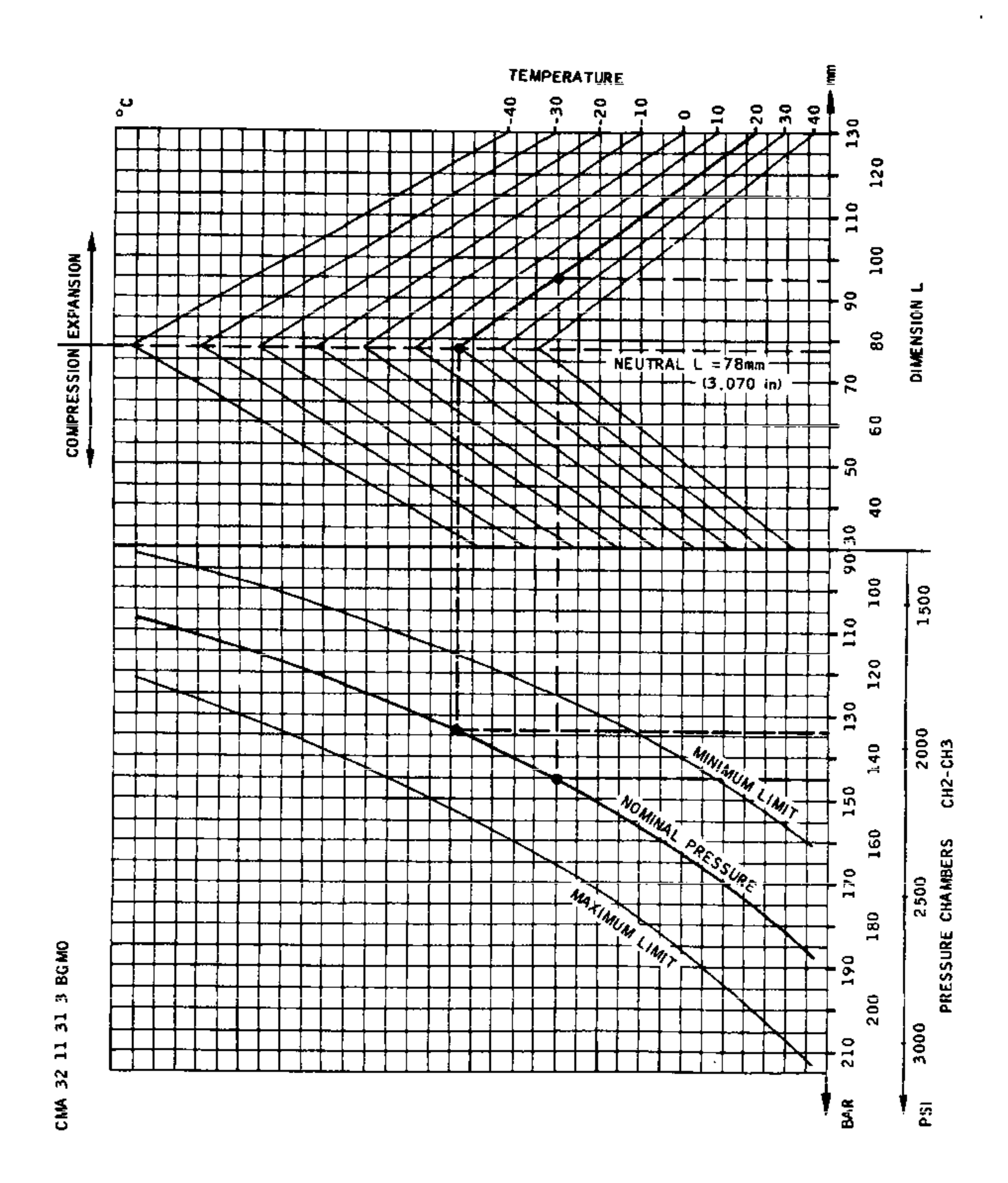
A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater Than 183621 lbf (81600 daN)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramidal Adapter Lifting LH	D921485000
Balancing Device - Pyramidal Adapter Lifting RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Rule 0 - 200 mm (0 - 7.87 in.)	
Thermometer - 40 to + 40°C	
Air/Hydraulic Tool Kit	
Compressed Nitrogen Supply ; Minimum Pressure 150 bars (2175 psi) with Pressure Regulator	
Wrench - Bushed End	167600-78
Set of Concentric Tube Wrenches and Extension Tube	C47845

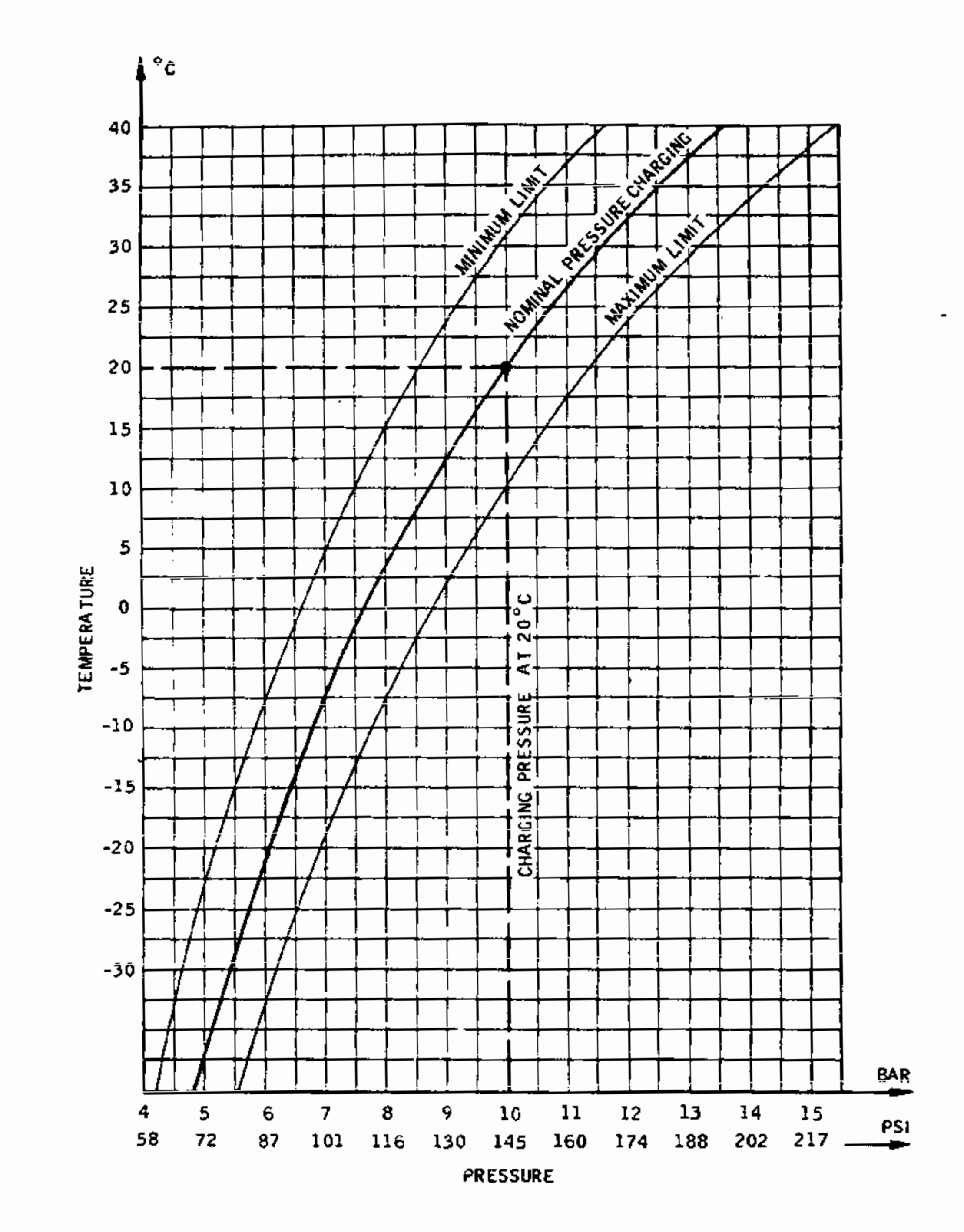
B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that



Pitch Damper Charging of Chambers CH2, CH3
Figure 304



CMA 32 11 31 3 BJMO

Pitch Damper Charging of Chamber CH4
Figure 305

landing gear Normal control lever is in NEUTRAL position.

(3) Display warning notice in flight compartment.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Prepare a charging system using components from air/hydraulic tool kit.

NOTE : Indexes of charging system componenets correspond with those shown in air/hydraulic tool kit.

C. Charging

NOTE : The charging pressures indicated on pitch damper placards adjacent to the valves are nominal values, that is for an ambient temperature of 20°C and with sliding tube in neutral position.

Intercommunicating chambers CH2 and CH3 (valve V2) nitrogen pressure : 134 bars (1985 psi).

Expansion chamber CH4 (valve V3) nitrogen pressure : 10 bars (145 psi).

NOTE : The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and temperature.

The temperature in chamber CH4 is a function of temperature only.

(1) Charging of intercommunicating chambers CH2 and CH3

(a) Make certain that bogie beam is in neutral position L = 78 mm (3.070 m).

(b) Note ambient temperature as near as possible to pitch damper.

(c) Mark value L = 78 mm (3.070 in.) on horizontal scale and from this point draw a vertical to the point of intersection with ambient temperature isotherm.

(d) From this draw a horizontal through the nominal pressure curve.

(e) From this point draw a vertical through the horizontal pressure scale.

(f) Note pressure.

(g) On charging valve V2, remove valve cap.

(h) Install wrenches C47845.

(i) Connect charging tool.

(j) Open valve and charge to previously noted pressure.

(k) Close valve and remove charging tools.

(l) Install valve cap.

(2) Charging of expansion chamber CH4

(a) Note ambient temperature as near as possible to pitch damper.

(b) Mark this value on vertical temperature scale.

(c) From this point draw a horizontal through the nominal pressure curve.

(d) From this point draw a vertical through the horizontal pressure scale.

(e) Note pressure.

(f) On charging valve V3, remove valve cap.

(g) Install wrenches C47845 with charging end fitting.

(h) Connect charging tool.

(i) Open valve and charge to previously noted pressure.

(j) Close valve and remove charging tools.

(k) Install valve cap.

D. Close-Up

(1) Remove safety stay.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS

CLEAR.

(2) Lower aircraft onto its wheels.

(3) Remove warning notice from flight compartment.

4. Charging of Pitch Damper with Aircraft on its Wheels
(Ref. Fig.302 and 303)
(Ref. Fig.304 and 305)

A. Equipment and Materials

DESCRIPTION	PART NO.
Rule 0 - 200 mm (0 - 7.87 in.)	
Thermometer - 40 to + 40°C	
Air/Hydraulic Tool Kit	
Compressed Nitrogen supply ; Minimum Pressure 150 bars (2175 psi) With Pressure Regulator	
Wrench - Bushed End	167600-78
Set of Concentric Tube Wrenches And Extension Tube	C47845

B. Prepare

(1) Prepare a charging system using components from air/hydraulic tool kit.

NOTE: Indexes of charging system components correspond with those shown in air/hydraulic tool kit.

C. Charging

NOTE: The charging pressures indicated on pitch damper placards adjacent to the valves and repeated here below are nominal values, that is, for an ambient temperature of 20°C and with sliding tube in neutral position.

RB Intercommunicating chambers CH2 and CH3 (valve V2) nitrogen pressure 134 bars (1985 psi).

Expansion chamber CH4 (valve V3) nitrogen pressure 10 bars (145 psi).

NOTE: The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and the temperature.

· The temperature in expansion chamber CH4 is a function of the temperature only.

(1) Charging of intercommunicating chambers CH2 and CH3

(a) Measure sliding tube remaining stroke (dimension L).

(b) Note ambient temperature as near as possible to pitch damper.

(c) Mark value L on horizontal scale and from this point draw a vertical to the point of intersection with the ambient temperature isotherm.

(d) From this point draw a horizontal through the nominal pressure curve.

(e) From this point draw a vertical through horizontal pressure scale.

(f) Note pressure.

(g) On charging valve V2, remove valve cap.

(h) Install wrenches C47845.

(i) Connect charging tool.

(j) Open valve and charge to previously noted pressure.

(k) Close valve and remove charging tools.

(l) Install valve cap.

(2) Charging of Expansion Chamber CH4

(a) Note ambient temperature as near as possible to pitch damper.

(b) Mark this value on vertical temperature scale.

(c) From this point draw a horizontal through nominal pressure scale.

(d) From this point draw a vertical through horizontal pressure scale.

(e) Note pressure.

(f) On charging valve V3, remove valve cap.

(g) Install wrenches C47845.

(h) Connect charging tool.

(i) Open charging valve and charge to previously noted pressure.

(j) Close valve and remove charging tools.

(k) Install valve cap.

D. Close-Up

Not applicable

PITCH DAMPER - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

RB IT IS NECESSARY TO ENSURE THAT THE BOGIE BEAM IS
RB PERPENDICULAR TO THE LANDING GEAR LEG WHENEVER A PITCH
RB DAMPER IS REPLACED. THIS PROCEDURE APPLIES IRRESPECTIVE
RB OF WHETHER ONE OR BOTH PITCH DAMPERS ARE BEING REPLACED.

RB AFTER REPLACING A PITCH DAMPER AT A LINE STATION WITH THE
RB AIRCRAFT ON ITS WHEELS, IT IS IMPERATIVE THAT BOGIE
RB ALIGNMENT IS VERIFIED AND PITCH DAMPERS ARE ADJUSTED WITH
RB THE AIRCRAFT ON JACKS WITHIN 7 DAYS OF REPLACING THE
RB DAMPER.

1. General

Each main landing gear is fitted with two pitch dampers. The pitch dampers are of two types, type I and type II. They can be differentiated as follows :

- by the identification placard affixed to the pitch damper
- type I pitch dampers are equipped with a bleed valve at the end of the sliding tube.

Only the front pitch damper is fitted with a microswitch. The front deflector is supported at the front pitch damper forward attach point.

After a landing gear retraction interdiction caused by :
- faulty bogie beam aligned microswitch
- both pitch dampers unserviceable
- deformation of bogie beam aligned microswitch actuating rod.

Temporary repair can be carried out at a line station with the aircraft on its wheels.

If bogie beam aligned microswitch is faulty replace microswitch.

If both pitch dampers are unserviceable, according to spares available, replace either:

- Rear pitch damper

Remove rear pitch damper and charge sufficiently to compensate for leakage. Measure pitch damper end-fitting centre-to-centre dimension to within ± 0.1 mm (0.0039 in.). Adjust the length of replacement pitch damper to obtain same dimension. Depressurize pitch damper, install and charge.

- Front pitch damper

Perform same procedure as for rear pitch damper, but before

depressurizing for installation adjust length of bogie beam aligned microswitch actuating rod.

NOTE : In so far as is feasible, pitch dampers of the same type should be installed on the same landing gear leg.

If bogie beam aligned microswitch actuating rod is deformed :
- Depressurize front pitch damper, disconnect at forward attach point and re-charge.
  Remove microswitch-actuating rod assembly, install replacement, depressurize pitch damper, connect at front attach point and re-charge.

WARNING : AFTER REPLACEMENT OF A PITCH DAMPER AT A LINE STATION WITH THE AIRCRAFT ON ITS WHEELS IT IS IMPERATIVE THAT, UPON RETURN TO MAIN BASE, BOGIE BEAM ALIGNMENT BE CHECKED AND PITCH DAMPERS ADJUSTED WITH THE AIRCRAFT ON JACKS.

2. Pitch Damper - Front

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183 621 lbf.) spec.	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adpater RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Extractor	D46068
Tool	D46069

**ON A/C ALL

B C Spanner 256900/78 or
B 2-32-1507-1BA

DESCRIPTION	PART NO.
B C Spanner	257000/78 or
B	2-32-1506-1BA

**ON A/C ALL

Compressed Nitrogen Supply with Pressure Regulator

Circuit Breaker Safety Clips

Common Grease (Ref. 20-30-00, No.051)

Cleaning (Ref. 20-30-00, No.468)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment.

(4) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(5) Jack up aircraft (Ref. 07-11-00).

(6) Position safety stay.

(7) Disconnect front deflector at lower part (Ref. 32-11-12 Removal/Installation).

(8) Disconnect brake torque arms at landing gear shock

absorber (Ref. 32-11-32, Removal/Installation).

NOTE : This disconnection is necessary in order to gain access to pin at landing gear leg.

(9) Release pressure from nitrogen chambers of pitch damper to be removed.

NOTE : Do not release pressure from the pitch damper remaining in position.

C. Remove (Ref. Fig.401 and 402)

(1) Disconnect microswitch plug and remove the two straps securing the electrical wiring.

(2) Disconnect pitch damper from main gear shock absorber.

(a) Remove cotter pin and remove nut (6). Retain washer (5) and flange (4) for reinstallation.

(b) Drive out retaining pin (2) and screw (1).

(c) Extract hollow pin (3) using extractor D46068.

(d) Provisionally hold pitch damper in position by inserting a pin in place of hollow pin (3).

(3) Disconnect pitch damper at bogie beam fork fitting.

(a) Remove nut (19). Remove bolt (23) with washer (22).

(b) Remove two shouldered pins (18) retain spacer (16) for reinstallation.

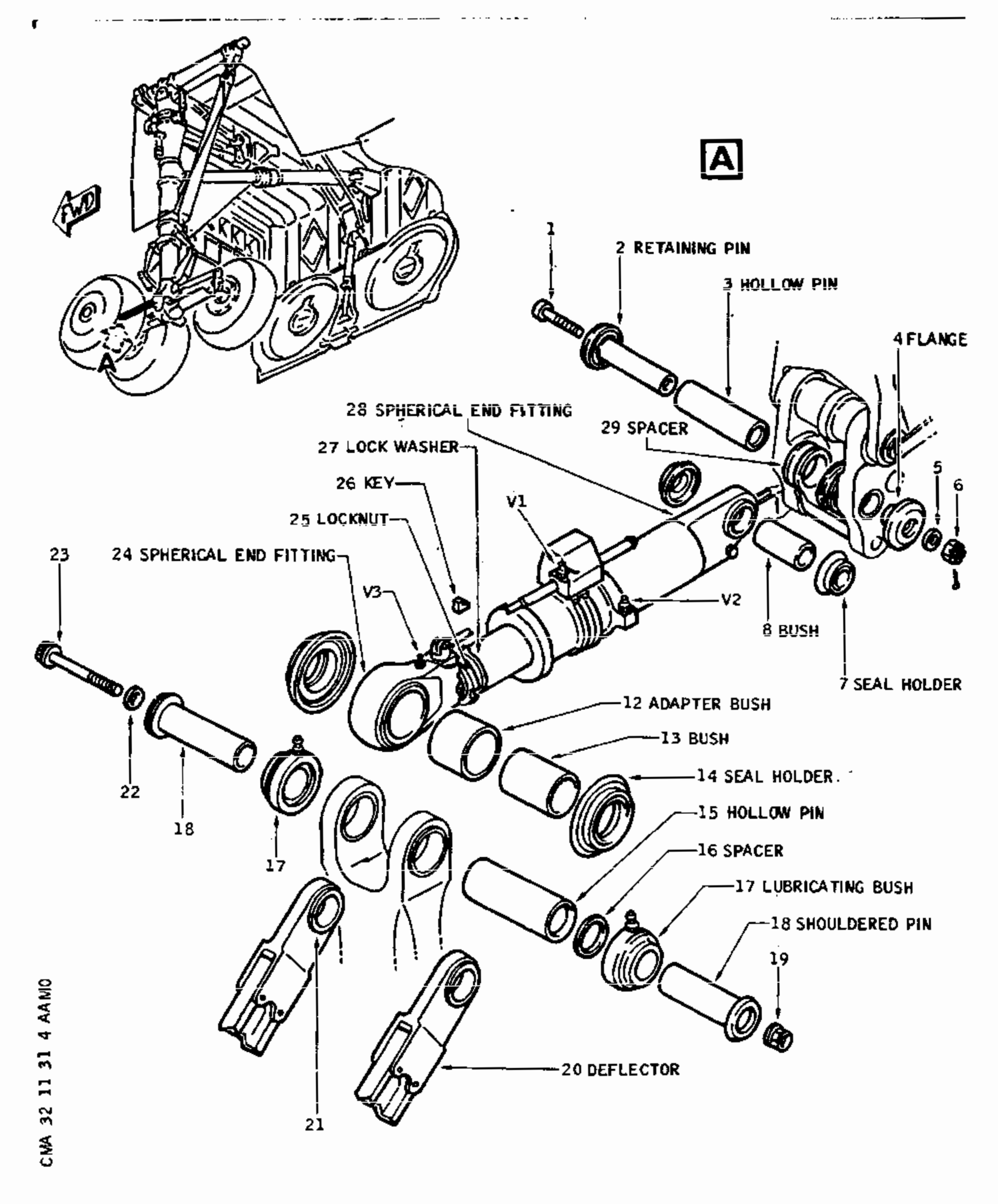
(c) Remove front deflector (20) retain lubricating bushes (17).

(d) Extract hollow pin (15) using tool D46069.

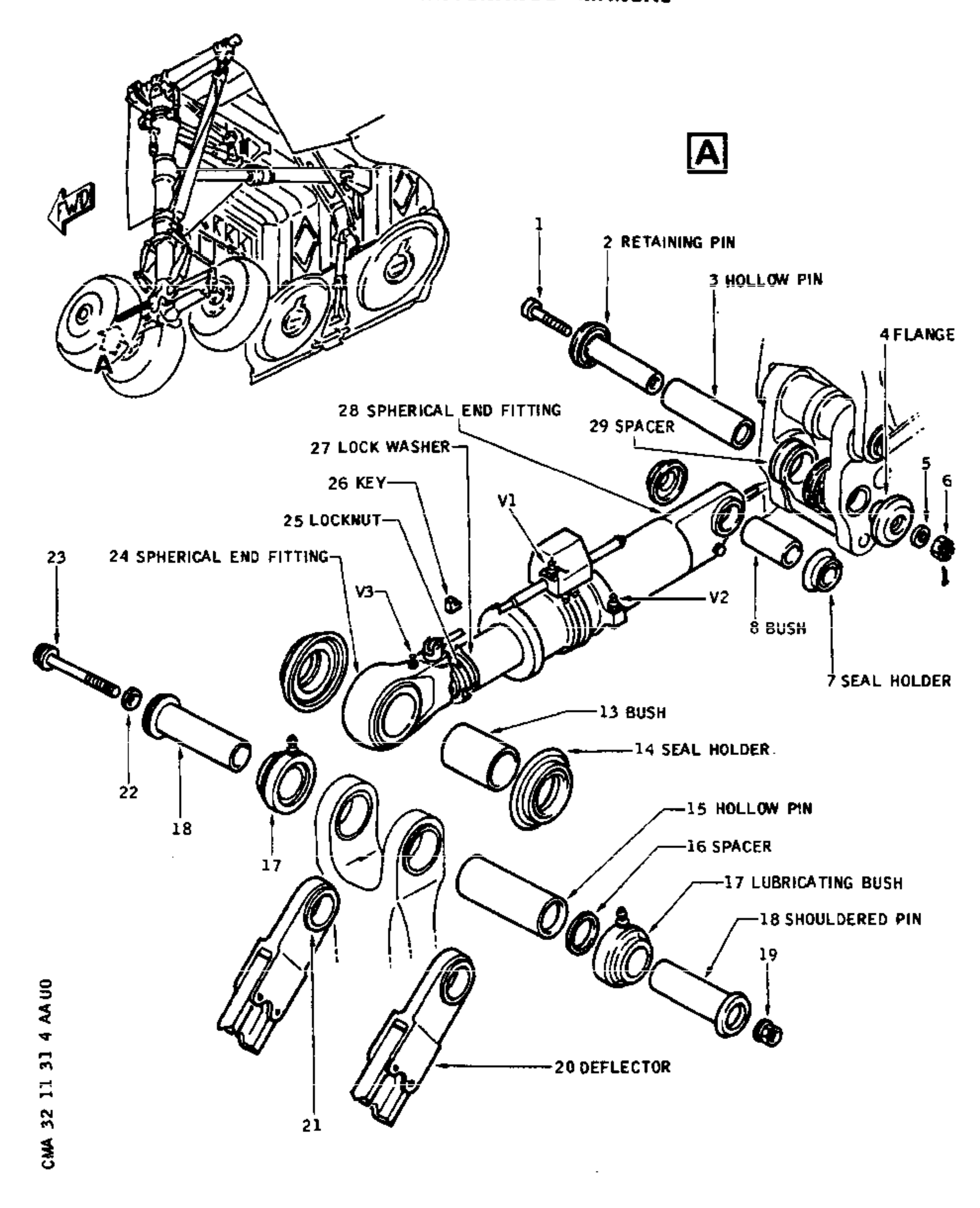
(e) Disengage pitch damper spherical end fitting. Retain seal holders (14) adapter bush (12) and bush (13) for reinstallation.

NOTE : Adapter bush (12) is installed on type I pitch dampers only.

(f) Remove pitch damper. Retain seal holders (7) and bush (8).



Front Pitch Damper
Figure 401



Front Pitch Damper
Figure 402

NOTE: Spacer (29) remains fitted to brake torque arm attach pin.

D. Preparation of Replacement Component

(1) On removed pitch damper.

(a) Remove bogie beam aligned microswitch assembly (Ref. 32-31-92, Removal/Installation).

(2) On replacement pitch damper

(a) Charge chambers CH2 and CH3 (valve V2) to 20 ± 2 bar (290 ± 29 psi).

WARNING: FOR PRELIMINARY ADJUSTMENT DO NOT EXCEED THIS PRESSURE.

(b) Make certain that chamber CH4 is completely depressurized (valve V3).

(3) Make certain that seals are in correct condition. Replace if necessary.

(4) Clean all components to be installed with product No. 468 and dry with filtered air.

(5) Lightly grease side faces of fork-fittings (product No. 051).

RB (6) Perform a bogie beam alignment check (Ref. 32-31-92,
RB Adjustment/Test, Para.2.B.).

E. Install

RB CAUTION: ENSURE THAT THE BOGIE BEAM IS PERPENDICULAR TO
RB THE LANDING GEAR LEG (REF. 32-31-92,
RB ADJUSTMENT/TEST, PARA.2.B.).

(1) Lightly grease pins and bushes with product No. 051 to facilitate installation.

(2) Connect pitch damper to main gear shock absorber.

(a) Make certain that seal holders (7) are fitted with their seals.

(b) Install bush (8) and two seal holders (7) in pitch damper spherical end-fitting.

(c) Position pitch damper, charging valves facing upwards, in main gear shock absorber fork-fitting making certain that spacer (29) is centered.

(d) Install hollow pin (3).

(e) Install retaining pin (2), fitted with its seal, head facing inboard.

(f) Install flange (4) fitted with its seals.

(g) Install screws (1) in retaining pin (2) and secure flange (4) with washer (5) and nut (6). Torque nut to between 1 and 2 mdaN (7.375 and 14.751 lbf ft) and safety with a cotter pin.

(3) Connect pitch damper to bogie beam fork-fitting.

(a) Make certain that seal holders (14) are fitted with their seals.

(b) Install bush (13) and adapter bush (12) (type I only) with two seal holders (14) in pitch damper spherical end-fitting (24).

(c) Position spherical end-fitting (24) in bogie beam fork-fitting. Make certain that spherical end-fitting and bogie beam fork-fitting bores are aligned.

(d) If necessary adjust spherical end-fitting (24). Unscrew locknut (25), fold back tab of lock washer (27), withdraw key (26).
Turn sliding tube using C spanner 257000/78 until spherical end-fitting and fork-fitting bores are aligned.

(e) Install hollow pin (15), using tool D46069.

(f) Turn sliding tube using C spanner 257000/78 until key recess is aligned with nearest slot.

<u>NOTE</u>: Minimum possible adjustment is 0.34 mm (0.013 in) (1/16 of a turn) which is equivalent to a bogie beam angular variation of 4 minutes.

(g) Install key (26) and lock washer (27).

(h) Tighten locknut (25) and safety with lock washer (27).
Type I: torque to between 10 and 12 mdaN (73.756 and 88.507 lbf ft).

Type II: torque to between 7 and 9 mdaN (51.629 and 66.380 lbf ft).

(j) Install lubricating bushes (17) fitted with their seals and grease nipple.

(k) Position front deflector (20) fork-fitting. Make certain that bushes (21) are in position on fork-fitting.

(l) Install one shouldered pin (18), spacer (16) and other shouldered pin (18).

(m) Install bolt (23) with washer (22) and nut (19). Torque nut (19) to 2.5 mdaN (18.439 lbf ft).

(4) Install microswitch (Ref. 32-31-92, Removal/Installation), electrical wiring securing straps and connect microswitch electrical plug.

F. Test

Not applicable.

G. Close-Up

(1) Charge nitrogen chambers CH2, CH3 and CH4 (Ref. 32-11-31, Servicing).

(2) Connect brake torque arms at main gear shock absorber (Ref. 32-11-32, Removal/Installation).

(3) Connect front deflector at its lower attach point. (Ref. 32-11-12, Removal/Installation).

RB (4) Perform an undercarriage retraction/extension test to
RB function the system (Ref. 32-31-00, Adjustment/Test).

(5) Remove safety stay.

RB (6) Lower aircraft onto its wheels.

RB (7) Grease pitch damper hinge points (Ref. 12-22-32).

RB (8) Remove safety clips and tags and reset circuit
RB breakers.

3. Pitch Damper - Rear

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183621 lbf.) Spec.	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Extractor	D46068
Tool	D46069
C Spanner	256900/78
C Spanner	257000/78
Compressed Nitrogen Supply with Pressure Regulator	
Circuit Breaker Safety Clips	
R Common Grease (Ref. 20-30-00, No.051)	
R Cleaning (Ref. 20-30-00, No.468)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment.

(4) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER		MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G	1	A 6
UC SELECTOR RAISE CONT		G	2	A 7
UC LOWER DOORS OPEN SUP		G	3	A 8
UC SELECTOR LOWER CONT		G	4	A 9

(5) Jack up aircraft (Ref. 07-11-00).

(6) Position safety stay.

(7) Disconnect front deflector at lower part (Ref. 32-11-12, Removal/Installation).

(8) Disconnect brake torque arms at landing gear shock absorber (Ref. 32-11-32, Removal/Installation).

NOTE : This disconnection is necessary in order to gain access to pin at landing gear leg.

(9) Release pressure from nitrogen chambers of pitch damper to be removed.

NOTE : Do not release pressure from the pitch damper remaining in position.

R C. Remove (Ref. Fig.403 and 404)

(1) Disconnect pitch damper from main gear shock absorber.

(a) Remove cotter pin and remove nut (41). Retain washer (42) and flange (43) for reinstallation.

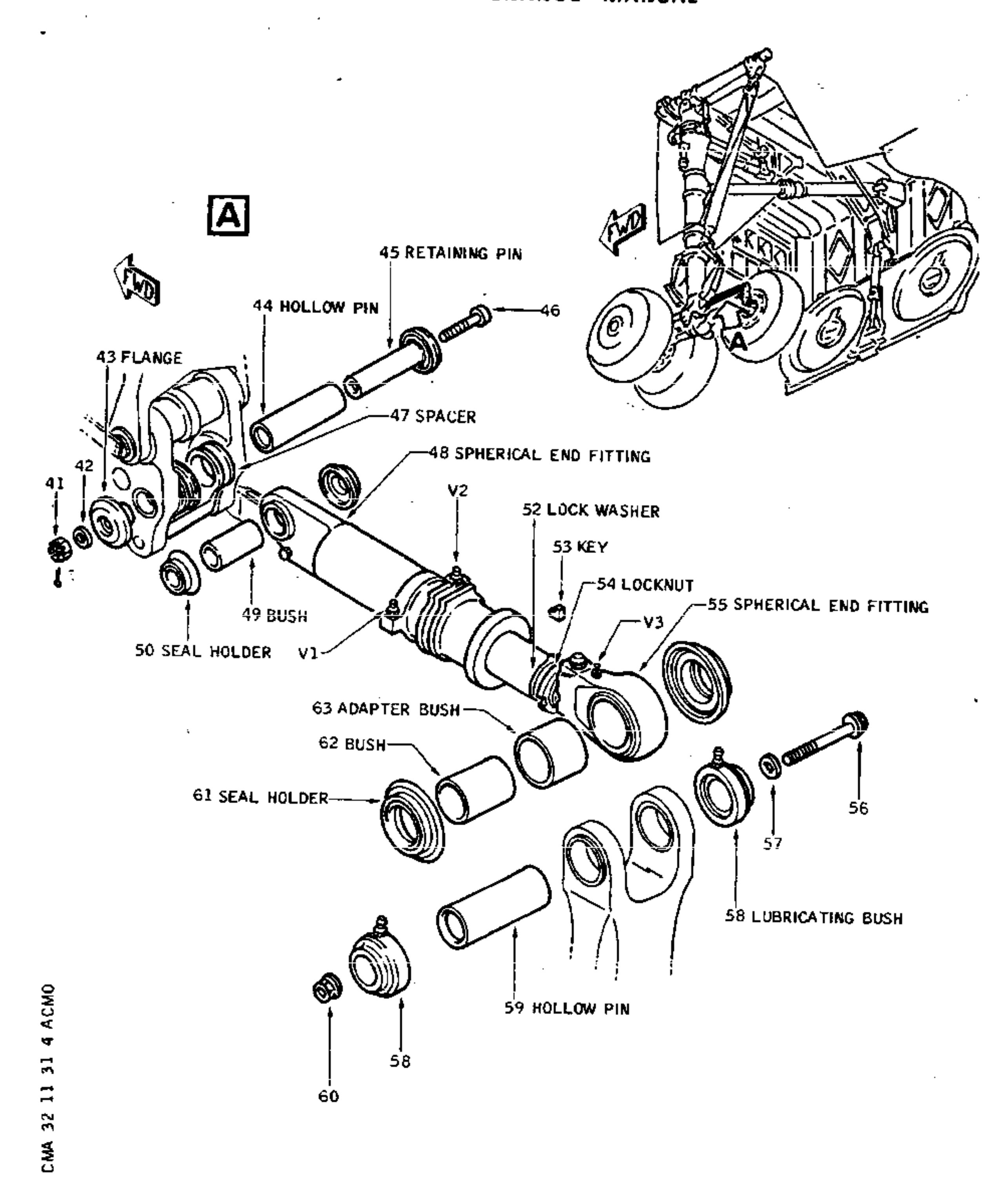
(b) Drive out retaining pin (45) and screw (46).

(c) Extract hollow pin (44) using extractor D46068.

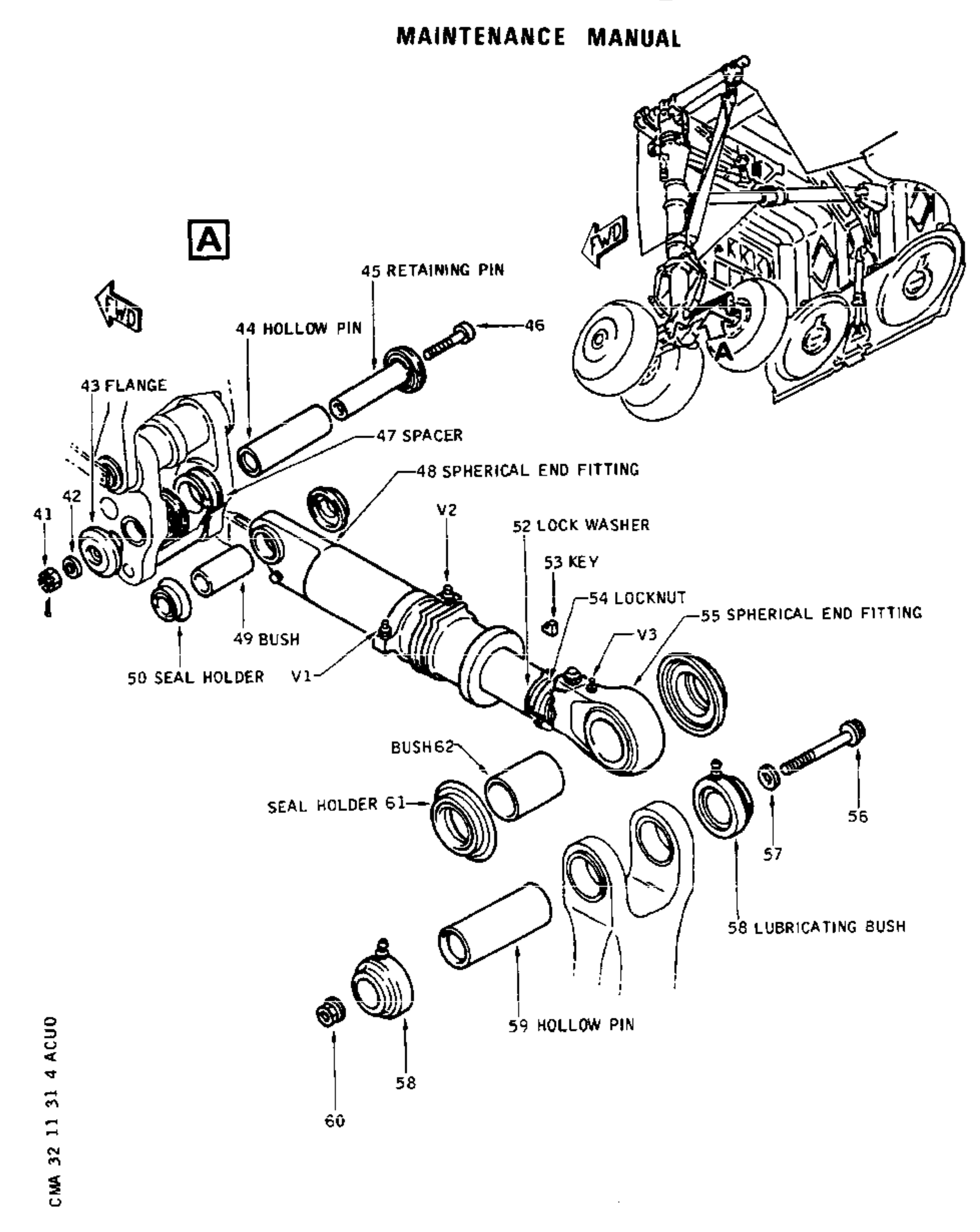
(d) Provisionally hold pitch damper in position by inserting a pin in place of hollow pin (44).

(2) Disconnect pitch damper at bogie beam fork-fitting.

(a) Remove nut (60). Remove bolt (56) and retain washer (57) for reinstallation.



Rear Pitch Damper
Figure 403



Rear Pitch Damper
Figure 404

(b) Remove lubricating bushes (58).

(c) Extract hollow pin (59) using tool D46069.

(d) Disengage pitch damper spherical end-fitting from fork-fitting. Retain seal holders (61), bush (62) and adapter bush (63) for reinstallation.

R NOTE : Adapter bush (63) is installed on type I
R pitch dampers only.

(e) Remove pitch damper. Retain seal holders (50) and bush (49).

NOTE : Spacer (47) remains fitted to brake torque arm attach pin.

D. Preparation of Replacement Component

(1) On replacement pitch damper

(a) Charge chambers CH2 and CH3 (valve V2) to 20 ± 2 bars (290 ± 29 psi).

WARNING : FOR PRELIMINARY ADJUSTMENT DO NOT EXCEED THIS PRESSURE.

(b) Make certain that chamber CH4 is completely depressurized (valve V3).

(2) Make certain that seals are in correct condition. Replace if necessary.

(3) Clean all components to be installed with product No.468 and dry with filtered air.

(4) Lightly grease side faces of fork-fittings (Product No.051).

E. Install

(1) Lightly grease pins and bushes with product No.051 to facilitate installation.

(2) Connect pitch damper to main gear shock absorber.

(a) Make certain that seal holders (50) are fitted with their seals.

(b) Install bush (49) and two seal holders (50) in pitch damper spherical end-fitting (48).

(c) Position pitch damper, charging valves facing upwards, in main gear shock absorber fork-fitting making certain that spacer (47) is centred.

(d) Install hollow pin (44).

(e) Install retaining pin (45), fitted with its seal, head facing inboard.

(f) Install flange (43) fitted with its seals.

(g) Install screw (46) in retaining pin (45) and secure flange (43) with washer (42) and nut (41). Tighten nut and safety with a cotter pin.
Torque to between 1 and 2 m.daN (7.375 and 14.751 lbf.ft.).

(3) Connect pitch damper to bogie beam fork-fitting.

(a) Make certain that seal holders (61) are fitted with their seals.

R R (b) Install bush (62) and adapter bush (63) (type I only) with two seal holders (61) in pitch damper spherical end-fitting (55).

(c) Position spherical end-fitting (55) in bogie beam fork-fitting. Make certain that spherical end-fitting (55) and bogie beam fork-fitting bores are aligned.

(d) If necessary adjust spherical end-fitting (55). Unscrew locknut (54), fold back tab of lock washer (52), withdraw key (53).
Turn sliding tube using C spanner 257000/78 until spherical end-fitting and fork-fitting bores are aligned.

(e) Install hollow pin (59) using tool D46069.

(f) Turn sliding tube using C spanner 257000/78 until key recess is aligned with nearest slot.

<u>NOTE</u> : Minimum possible adjustment is 0.34 mm (0.013 in.) (1/16 of a turn) which is equivalent to a bogie beam angular variation of 4 minutes.

(g) Install key (53) and lock washer (52).

(h) Tighten locknut (54) and safety with lock washer

(52).

R Type I : torque to between 10 and 12 m.daN (73.756 and 88.507 lbf.ft.).

R Type II : torque to between 7 and 9 m.daN (51.629 and 66.380 lbf.ft.).

(j) Install lubricating bushes (58) fitted with their seals and grease nipple.

(k) Install bolt (56) with washer (57) and nut (60). Torque nut (60) to 1.5 m.daN (11.063 lbf.ft.).

F. Test

Not applicable.

G. Close-Up

(1) Charge nitrogen chambers CH2, CH3 and CH4 (Ref. 32-11-31, Servicing).

(2) Connect brake torque arms at main shock absorber (Ref. 32-11-32, Removal/Installation).

(3) Connect front deflector at its lower attach point (Ref. 32-11-12, Removal/Installation).

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

(6) Grease pitch damper hinge points (Ref. 12-22-32).

(7) Remove safety clips and tags and reset circuit breakers.

4. Pitch Dampers - Front and Rear

A. Equipment and Materials

DESCRIPTION	PART NO.
Nose and Main Gear Wheel Change Jack (Inflated Tyres)	07-20-0001
Jack - Lifting Capability greater than 81600 daN (183621 lbf.) spec.	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Extractor	D46068
Tool	D46069
C Spanner	256900/78
C Spanner	257000/78
Compressed Nitrogen Supply with Pressure Regulator	
Circuit Breaker Safety Clips	
Clinometer	
Metal Rule 3 m (118 in.)	
Common Grease (Ref. 20-30-00, No.051)	
Cleaning (Ref. 20-30-00, No.468)	

R B. Prepare

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(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment.

(4) Trip, safety and tag the following circuit breakers

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(5) Jack up aircraft (Ref. 07-11-00).

(6) Position safety stay.

(7) Disconnect front deflector at lower part (Ref. 32-11-12, Removal/Installation).

(8) Remove both wheels on same side of bogie beam (Ref. 12-37-00).

(9) Disconnect brake torque arms at landing gear shock absorber (Ref. 32-11-32, Removal/Installation).

NOTE : This disconnection is necessary in order to gain access to pin at landing gear leg.

R
R (10) Release pressure from nitrogen chambers of forward and aft pitch dampers to be removed.
R

(11) Position bogie beam perpendicular to landing gear leg.

(a) Position a jack under each end of bogie beam (07-20-0001).

(b) Using a clinometer and metal rule positioned on both wheel axles position bogie beam perpendicular to landing gear leg.
Tolerance ± 3 minutes.

(c) Maintain bogie beam perpendicular to landing gear

leg by means of two jacks.

C. Remove

R (1) Remove front pitch damper (Ref. Fig.401 and 402)

(a) Disconnect microswitch plug and remove the two straps securing the electrical wiring.

(b) Disconnect pitch damper from main gear shock absorber.

(b1) Remove cotter pin and remove nut (6). Retain washer (5) and flange (4).

(b2) Drive out retaining pin (2) and screw (1).

(b3) Extract hollow pin (3) using extractor D46068.

(b4) Provisionally hold pitch damper in position by inserting a pin in place of hollow pin (3).

(c) Disconnect pitch damper at bogie beam fork-fitting

(c1) Remove nut (19). Remove bolt (23) with washer (22).

(c2) Remove two shouldered pins (18) retain spacer (16) for reinstallation.

(c3) Remove front deflector (20) retain lubricating bushes (17).

(c4) Extract hollow pin (15) using tool D46069.

(c5) Disengage pitch damper spherical end-fitting. Retain seal holders (14) adapter bush (12) and bush (13) for reinstallation.

R NOTE : Adapter bush (12) is installed on
R type I pitch dampers only.

(c6) Remove pitch damper. Retain seal holders (7) and bush (8).

NOTE : Spacer (29) remains fitted to brake torque arm attach pin.

R (2) Remove rear pitch damper (Ref. Fig.403 and 404)

(a) Disconnect pitch damper from main gear shock absorber.

(a1) Remove cotter pin and remove nut (41). Retain washer (42) and flange (43) for reinstallation.

(a2) Drive out retaining pin (45) and screw (46).

(a3) Extract hollow pin (44) using extractor D46068.

(a4) Provisionally hold pitch damper in position by inserting a pin in place of hollow pin (44).

(b) Disconnect pitch damper at bogie beam fork-fitting

(b1) Remove nut (60). Remove bolt (56) and retain washer (57) for reinstallation.

(b2) Remove lubricating bushes (58).

(b3) Extract hollow pin (59) using tool D46069.

(b4) Disengage pitch damper spherical end-fitting from fork-fitting. Retain seal holders (61), bush (62) and adapter bush (63) for re-installation.

R NOTE : Adapter bush (63) is installed on
R type I pitch dampers only.

(b5) Remove pitch damper. Retain seal holders (50) and bush (49).

NOTE : Spacer (47) remains fitted to brake torque arm attach pin.

D. Preparation of Replacement Component

(1) On removed front pitch damper

(a) Remove bogie beam aligned microswitch assembly (Ref. 32-31-92, Removal/Installation).

(2) On both replacement pitch dampers

(a) Charge chambers CH2 and CH3 (valve V2) to 20 ± 2 bars (290 ± 29 psi).

WARNING : FOR PRELIMINARY ADJUSTMENT DO NOT EXCEED THIS PRESSURE.

(b) Make certain that chambers CH4 are completely depressurized (valve V3).

(3) Make certain that seals are in correct condition. Replace if necessary.

(4) Clean all components to be installed with product No.468 and dry with filtered air.

(5) Lightly grease side faces of fork-fittings (Product No.051).

E. Install

R (1) Install front pitch damper (Ref. Fig.401 and 402)

(a) Lightly grease pins and bushes with product No.051 to facilitate installation.

(b) Connect pitch damper to main gear shock absorber.

(b1) Make certain that seal holders (7) are fitted with their seals.

(b2) Install bush (8) and two seal holders (7) in pitch damper spherical end-fitting.

(b3) Position pitch damper, charging valves facing upwards, in main gear shock absorber fork-fitting making certain that spacer (29) is centred.

(b4) Install hollow pin (3).

(b5) Install retaining pin (2), fitted with its seal, head facing inboard.

(b6) Install flange (4) fitted with its seals.

(b7) Install screw (1) in retaining pin (2) and secure flange (4) with washer (5) and nut (6).
Tighten nut and safety with a cotter pin.
Torque to between 1 and 2 m.daN (7.375 and 14.751 lbf.ft.).

(c) Connect pitch damper to bogie beam fork-fitting.

(c1) Make certain that seal holders (14) are fitted with their seals.

(c2) Install bush (13) and adapter bush (12)
R (type I only) with two seal holders (14) in pitch damper spherical end-fitting (24).

(c3) Position spherical end-fitting (24) in bogie beam fork-fitting. Make certain that spherical end-fitting and bogie beam fork-fitting bores are aligned.

(c4) If necessary adjust spherical end-fitting (24).
Unscrew locknut (25), fold back tab of lock washer (27) withdraw key (26).
Turn sliding tube using C spanner 257000/78 until spherical end-fitting and fork-fitting bores are aligned.

(c5) Install hollow pin (15) using tool D46069.

(c6) Turn sliding tube using C spanner 257000/78 until key recess is aligned with nearest slot.

NOTE : Minimum possible adjustment is 0.34 mm (0.013 in.) (1/16 of a turn) which is equivalent to a bogie beam angular variation of 4 minutes.

(c7) Install key (26) and lock washer (27).

(c8) Tighten locknut (25) and safety with lock washer (27).
R Type I : torque to between 10 and 12 m.daN (73.756 and 88.507 lbf.ft.).

R Type II : torque to between 7 and 9 m.daN (51.629 and 66.380 lbf.ft.).

(c9) Install lubricating bushes (17) fitted with seals and grease nipple.

(c10) Position front deflector (20) fork-fitting. Make certain that bushes (21) are in position on fork-fitting.

(c11) Install one shouldered pin (18), spacer (16) and other shouldered pin (18).

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(c12) Install bolt (23) with washer (22) and nut (19).
Torque nut (19) to 2.5 m.daN (18.439 lbf.ft.)

(d) Install microswitch (Ref. 32-31-92, Removal/Installation), electrical wiring securing straps and connect microswitch electrical plug.

R (2) Install rear pitch damper (Ref. Fig.403 and 404)

(a) Lightly grease pins and bushes with product No.051 to facilitate installation.

(b) Connect pitch damper to main gear shock absorber.

(b1) Make certain that seal holders (50) are fitted with their seals.

(b2) Install bush (49) and two seal holders (50) in pitch damper spherical end-fitting (48).

(b3) Position pitch damper, charging valves facing upwards, in main gear shock absorber fork-fitting making certain that spacer (47) is centred.

(b4) Install hollow pin (44).

(b5) Install retaining pin (45), fitted with its seal, head facing inboard.

(b6) Install flange (43) fitted with its seals.

(b7) Install screw (46) in retaining pin (45) and secure flange (43) with washer (42) and nut (41).
Tighten nut and safety with a cotter pin.
Torque to between 1 and 2 m.daN (7.375 and 14.751 lbf.ft.).

(c) Connect pitch damper to bogie beam fork-fitting

(c1) Make certain that seal holders (61) are fitted with their seals.

(c2) Install bush (62) and adapter bush (63)
R (type I only) with two seal holders (61) in pitch damper spherical end-fitting (55).

(c3) Position spherical end-fitting (55) in

bogie beam fork-fitting. Make certain that spherical end-fitting (55) and bogie beam fork-fitting bores are aligned.

(c4) If necessary adjust spherical end-fitting (55). Unscrew locknut (54), fold back tab of lock washer (52), withdraw key (53). Turn sliding tube using C spanner 257000/78 until spherical end-fitting and fork-fitting bores are aligned.

(c5) Install hollow pin (59) using tool D46069.

(c6) Turn sliding tube using C spanner 257000/78 until key recess is aligned with nearest slot.

NOTE : Minimum possible adjustment is 0.34 mm (0.013 in.) (1/16 of a turn) which is equivalent to a bogie beam angular variation of 4 minutes.

(c7) Install key (53) and lock washer (52).

(c8) Tighten locknut (54) and safety with lock washer (52).
R Type I : torque to between 10 and 12 m.daN (73.756 and 88.507 lbf.ft.).

R Type II : torque to between 7 and 9 m.daN
R (51.629 and 66.380 lbf.ft.).

(c9) Install lubricating bushes (58) fitted with their seals and grease nipple.

(c10) Install bolt (56) with washer (57) and nut (60).
Torque nut (60) to 1.5 m.daN (11.063 lbf.ft.)

F. Test

Not applicable.

G. Close-Up

(1) Charge nitrogen chambers CH2, CH3 and CH4 (Ref. 32-11-31, Servicing).

(2) Connect brake torque arms at main shock absorber (Ref. 32-11-32, Removal/Installation).

(3) Install wheels (Ref. 12-37-00).

(4) Connect front deflector at its lower attach point (Ref. 32-11-12, Removal/Installation).

(5) Remove safety stay.

(6) Lower aircraft onto its wheels.

(7) Grease pitch damper hinge points (Ref. 12-22-32).

(8) Remove safety clips and tags and reset circuit breakers.

PITCH DAMPER (TYPE I) - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Scheduled check of charging pressure.
This operation can be performed either with the aircraft on its wheels or on jacks.

2. Check of Pitch Damper Charging Pressure with the Aircraft on Jacks

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack - Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Rule 0-200 mm (0-7.87 in.)	
Thermometer -40 to + 40 degrees C	
Pressure Gauge 0-200 bars (0-2900 psi)	
Air/Hydraulic Tool Kit	

DESCRIPTION	PART NO.
Wrench - Bushed End	167600-78
Set of Concentric Tube Wrenches and Extension Tube	C47845

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position Safety stay.

C. Pressure check (Ref. Fig. 601, 602 and 603)

NOTE : The charging pressures indicated on the pitch damper placards adjacent to the valves and repeated here below are nominal values, that is, for an ambient temperature of 20°C and with the sliding tube in neutral position.

Intercommunicating chambers CH2 and CH3 (valve V2)
Nitrogen pressure ; 100 bars (1450 psi).

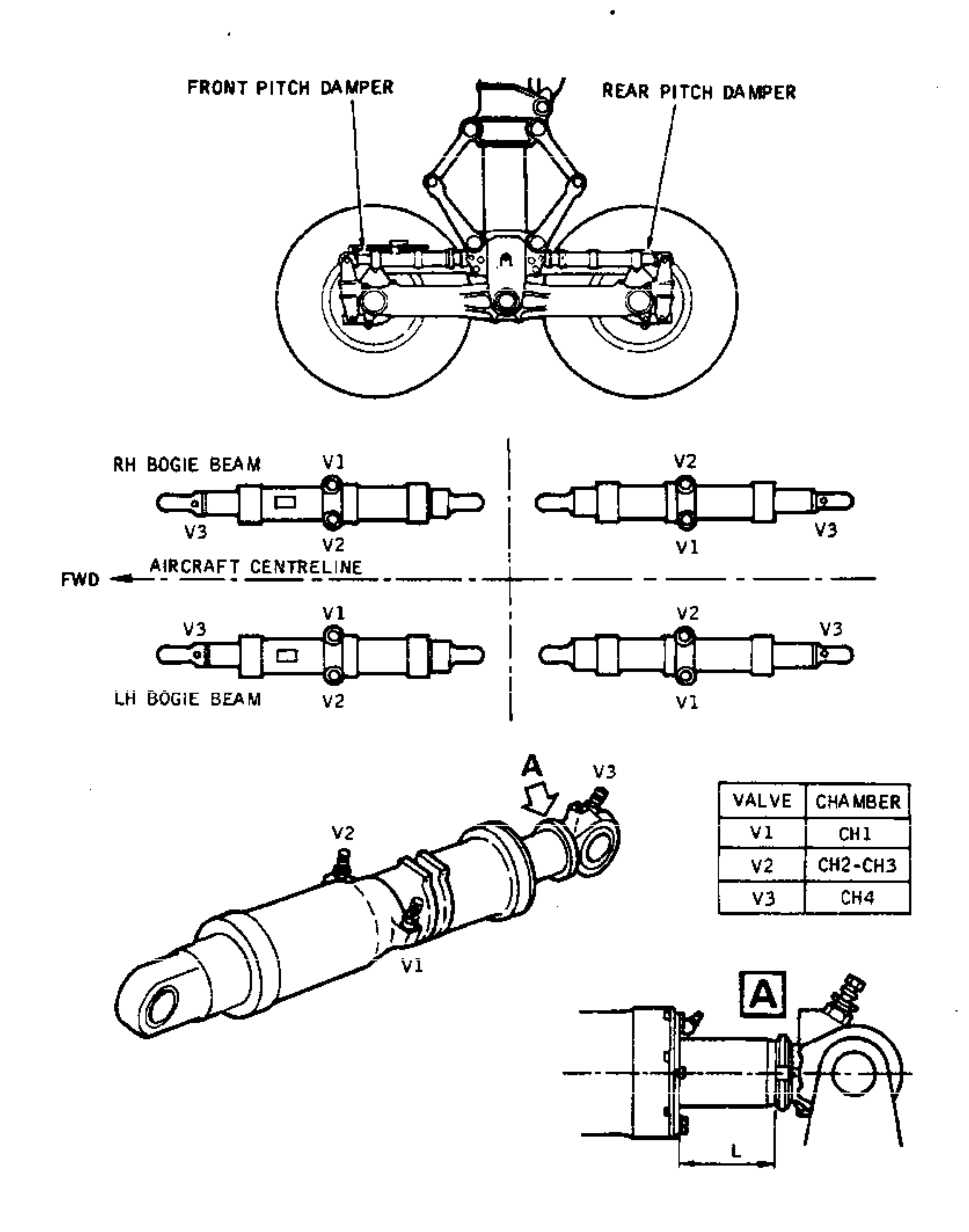
Expansion chamber CH4 (valve V3)
Nitrogen pressure ; 10 bars (145 psi)

NOTE : The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and the temperature.

The pressure in chamber CH4 is a function of the temperature only.

(1) Check of pressure in intercommunicating chambers CH2 and CH3 (valve V2).

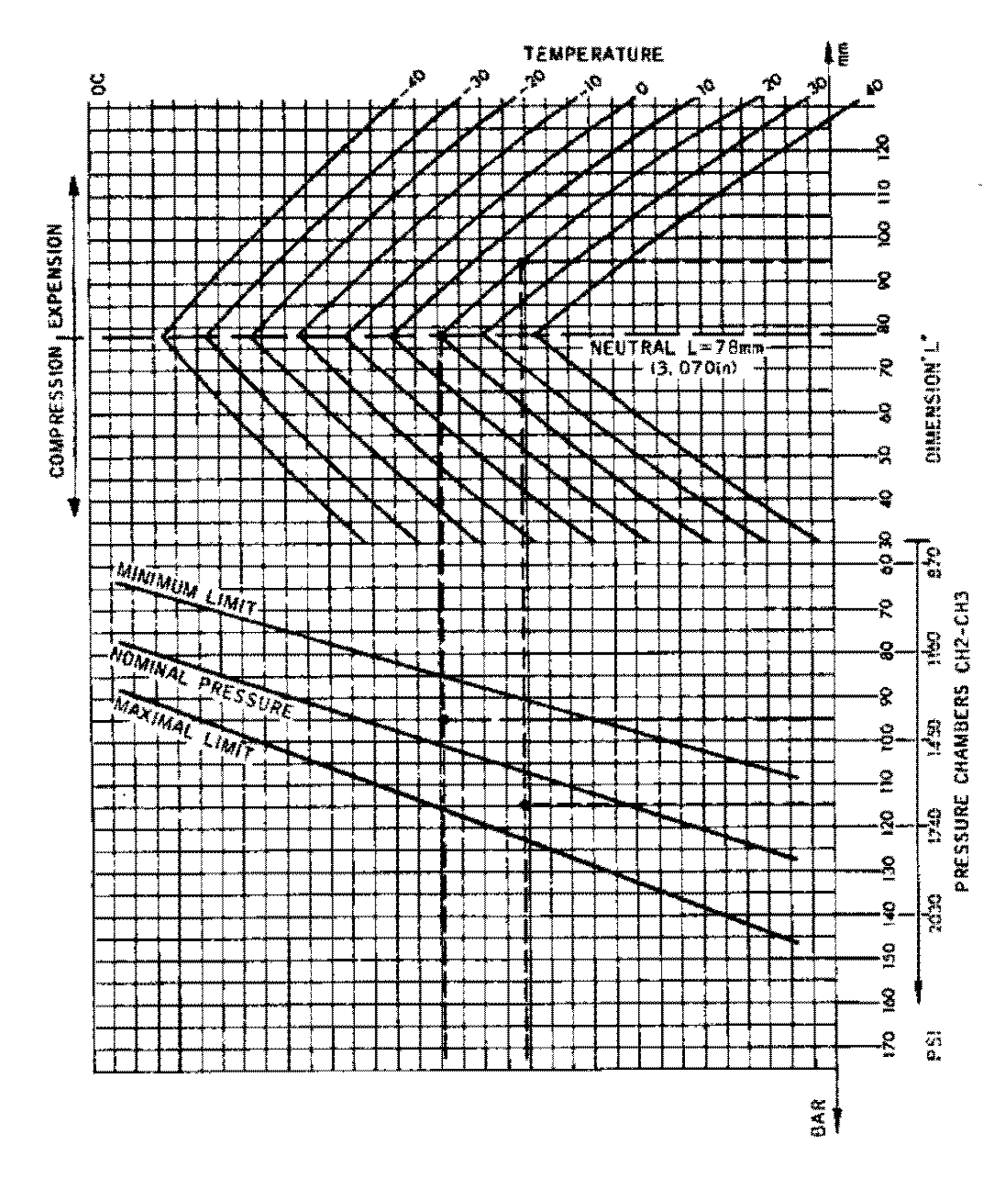
(a) Make certain that bogie beam is in neutral position



VALVE	CHAMBER
V1	CH1
V2	CH2-CH3
V3	CH4

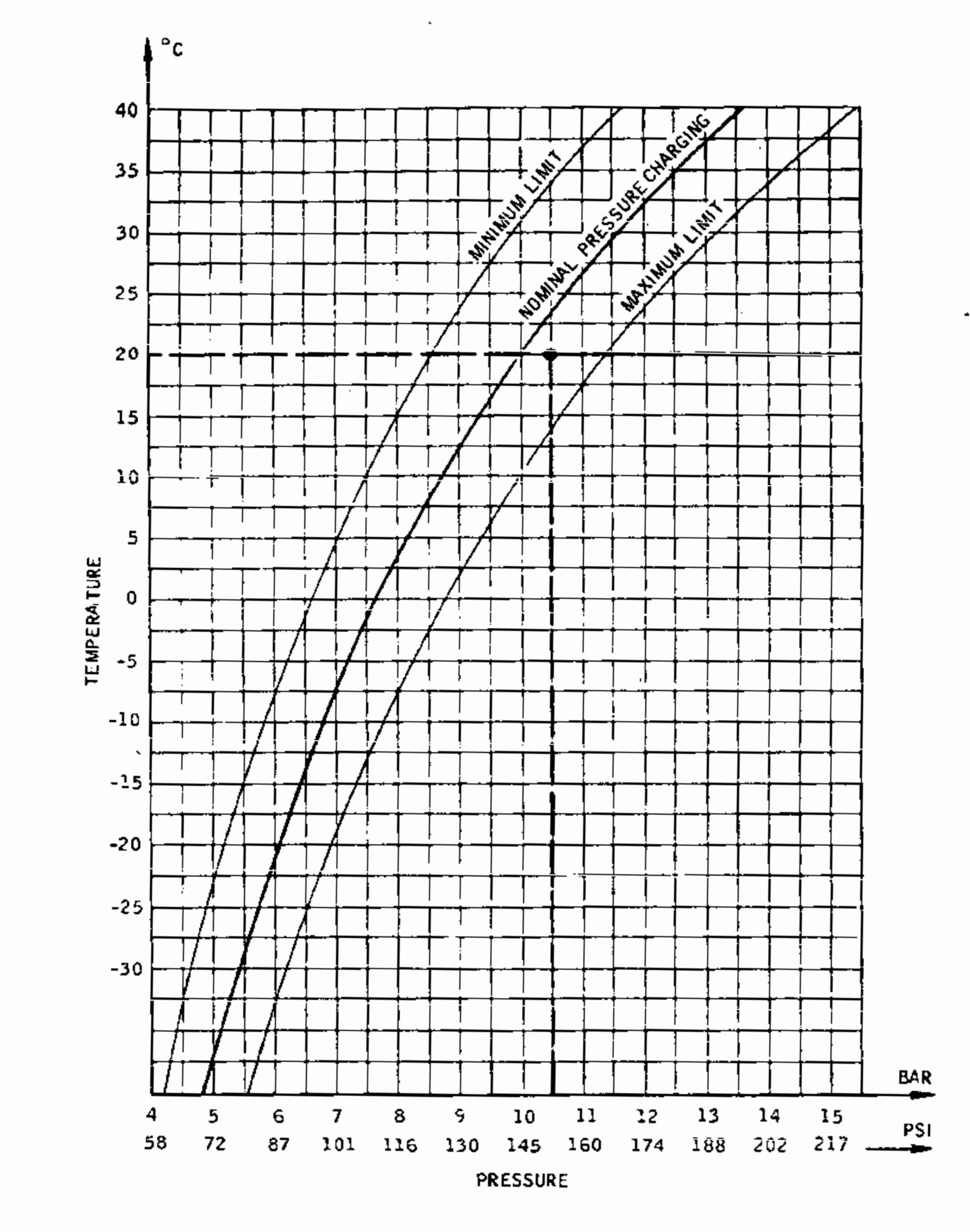
CMA 32 11 31 G AAM0

Pitch damper arrangement
Figure 601



CMA 32 11 31 6 ACMO

Pitch damper
Check of pressure in chambers CH2 - CH3
Figure 602



Pitch damper
Check of pressure in chamber CH4
Figure 603

L = 78 mm (3.070 in.)

(b) Note ambient temperature as near as possible to pitch damper.

(c) On charging valve V2, remove cap using wrench 167600-78.

(d) Install wrenches C47845.

(e) Install pressure gauge : 0-200 bars (0-2900 psi).

(f) Open valve and note pressure.

(g) Check on associated graph.

(g1) Mark value L = 78 mm (3.070 in) on horizontal scale and from this point draw a vertical to the point of intersection with the ambient temperature isotherm.

(g2) From this point draw a horizontal through the minimum - maximum limit pressure curves.

(g3) Mark the recorded pressure on the pressure scale and from this point draw a vertical through the previously drawn horizontal.

(g4) The point of intersection should fall within the minimum - maximum limit zone.

(h) Close valve V2 and remove wrenches.

(i) Install valve cap using wrench 167600-78.

(2) Check of pressure in expansion chamber CH4 (valve V3).

(a) Note the ambient temperature as near as possible to pitch damper.

(b) On charging valve V3 remove valve cap using wrench 167600-78.

(c) Install wrenches C47845.

(d) Install pressure gauge ; 0-20 bars (0-290 psi).

(e) Open valve and note pressure.

(f) Check on associated graph.

(f1) Mark ambient temperature on vertical scale.

(f2) From this point draw a horizontal through the minimum - maximum limit pressure curves.

(f3) Mark the recorded pressure on the pressure scale and from this point draw a vertical through the previously drawn horizontal.

(f4) The point of intersection should fall within the minimum - maximum limit zone.

(g) Close valve V3 and remove wrenches.

(h) Install valve cap using wrench 167600-78.

D. Close-Up.

(1) Remove Safety Stay.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR

(2) Lower aircraft onto its wheels.

3. Check of Pitch Damper Charging Pressures with the Aircraft on its wheels.

A. Equipment and Materials.

DESCRIPTION	PART NO.
Rule 0-200 mm (0-7.87 in.)	
Thermometer -40 to + 40 degrees C	
Pressure Gauge 0-200 bars (0-2900 psi)	
Air Hydraulic Tool Kit	
Wrench - Bushed End	167600-78
Set of Concentric Tube Wrenches and Extension Tube	C47845

B. Pressure check (Ref. Fig. 601, 602 and 603)

NOTE : The charging pressures indicated on the pitch damper placards adjacent to the valves and repeated here below are nominal values ; that is, for an ambient temperature of 20° and with the sliding tube in neutral position.

Intercommunicating chambers CH2 and CH3 (Valve 2)
Nitrogen pressure ; 100 bars (1450 psi)

Expansion chamber CH4 (Valve 3)
Nitrogen pressure 10 bars (145 psi).

The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and the temperature.

(1) Check of pressure in intercommunicating chambers CH2 and CH3 (Valve V2)

(a) Measure remaining stroke of sliding tube (dimension L).

(b) Note ambient temperature as near as possible to pitch damper.

(c) On charging valve V2, remove valve cap using wrench 167600-78.

(d) Install wrenches C47845.

(e) Install pressure gauge : 0-200 bars (0-2900 psi).

(f) Open valve and note pressure.

(g) Check on associated graph.

(g1) Mark value L on horizontal scale and from this point draw a vertical to the point of intersection with ambient temperature isotherm.

(g2) From this point draw a horizontal through the minimum - maximum limit pressure curves.

(g3) Mark the recorded pressure on pressure scale and from this point draw a vertical through the previously drawn horizontal.

(g4) The point of intersection should fall within the minimum - maximum limit zone.

(h) Close valve V2 and remove wrenches.

(i) Install valve cap using wrench 167600-78.

(2) Check of pressure in expansion chamber CH4 (valve V3).

(a) Note ambient temperature as near as possible to pitch damper.

(b) On charging valve V3, remove valve cap using wrench 167600-78.

(c) Install wrenches C47845.

(d) Install pressure gauge : 0-20 bars (0-290 psi).

(e) Open valve and note pressure.

(f) Check on associated graph.

(f1) Mark ambient temperature on vertical scale.

(f2) From this point draw a horizontal through the minimum - maximum limit pressure curves.

(f3) Mark recorded pressure on pressure scale and from this point draw a vertical through the

previously drawn horizontal.

(f4) The point of intersection should fall within the minimum - maximum limit zone.

(g) Close valve V3 and remove wrenches.

(h) Install valve cap using wrench 167600-78.

C. Close-Up.

Not applicable.

PITCH DAMPER (TYPE II) - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Scheduled check of charging pressure.
This operation can be performed either with the aircraft on its wheels or on jacks.

2. Check of Pitch Damper Charging Pressure With the Aircraft on Jacks.

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183621 lbf.)	07-10-0001
Safety Jack - Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Rule 0 - 200 mm (0 - 7.87 in.)	
Thermometer - 40 to + 40 degrees C.	
Pressure Gauge 0 - 200 bars (0 - 2900 psi)	
Air/Hydraulic Tool Kit	
Wrench - Bushed End	167600-78

DESCRIPTION	PART NO.
Set of Concentric Tube Wrenches and Extension Tube	C47845

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position Safety Stay.

C. Pressure Check (Ref. Fig. 601, 602 and 603)

NOTE : The charging pressures indicated on the pitch damper placards adjacent to the valves and repeated here below are nominal values, that is, for an ambient temperature of 20°C. and with the sliding tube in neutral position.

Intercommunicating chambers CH2 and CH3 (valve V2)
Nitrogen pressure ; 134 bars (1945 psi)

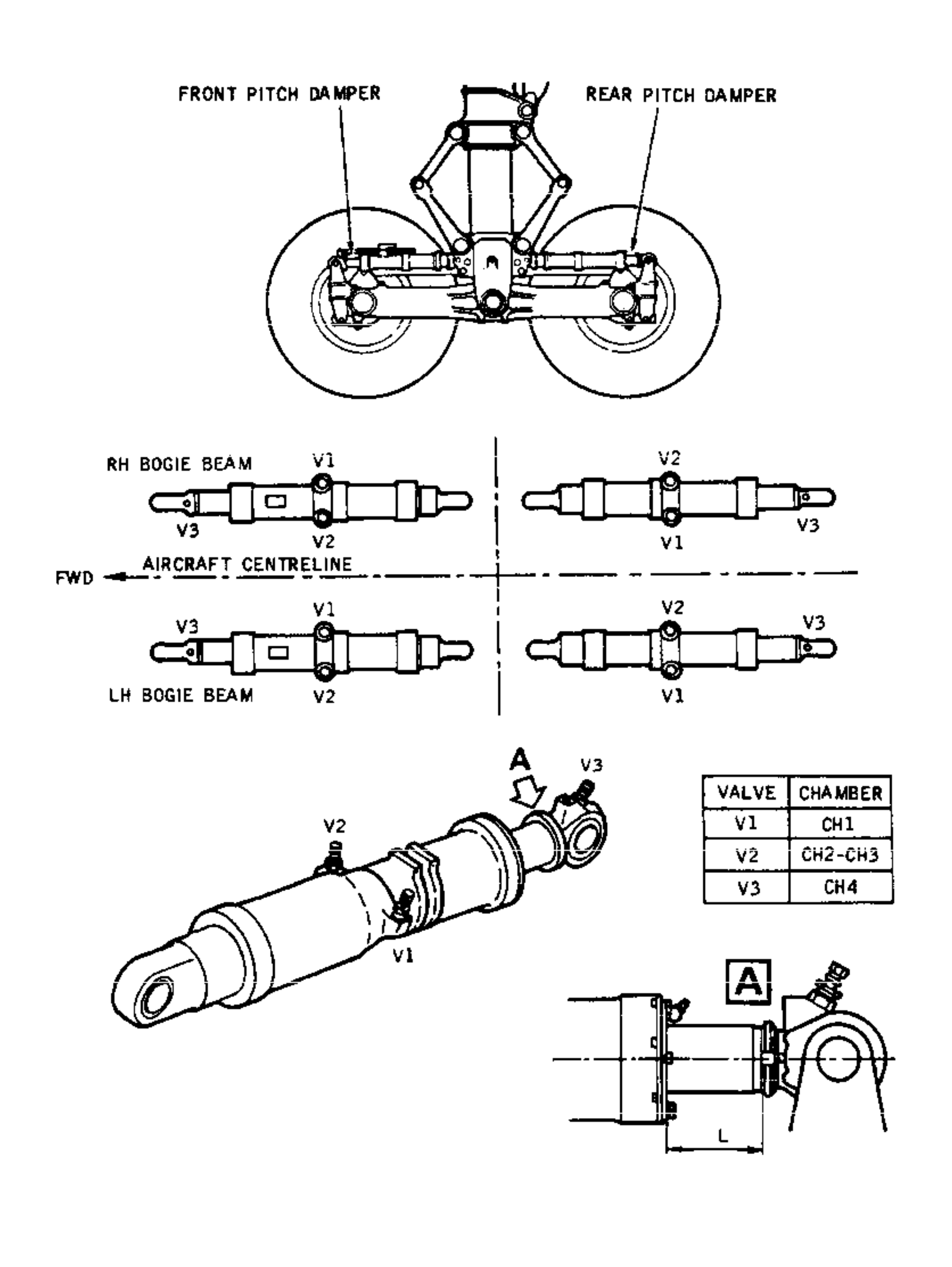
Expansion chamber CH4 (valve V3)
Nitrogen pressure ; 10 bars (145 psi)

NOTE : The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and the temperature.

The pressure in chamber CH4 is a function of the temperature only.

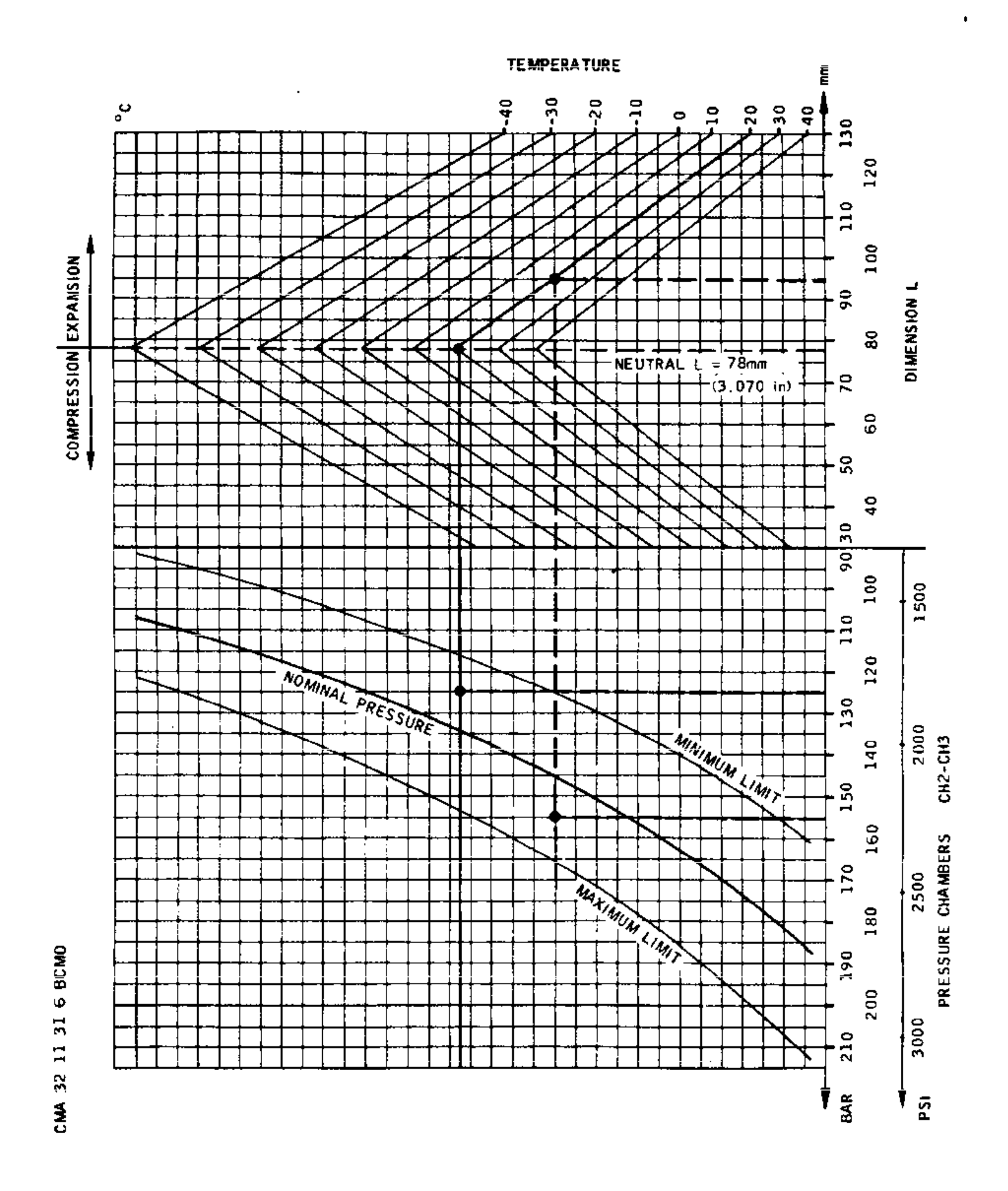
(1) Check of pressure in intercommunicating chambers CH2 and CH3 (valve V2)

(a) Make certain that bogie beam is in neutral position
L = 78 mm (3.07 in.).

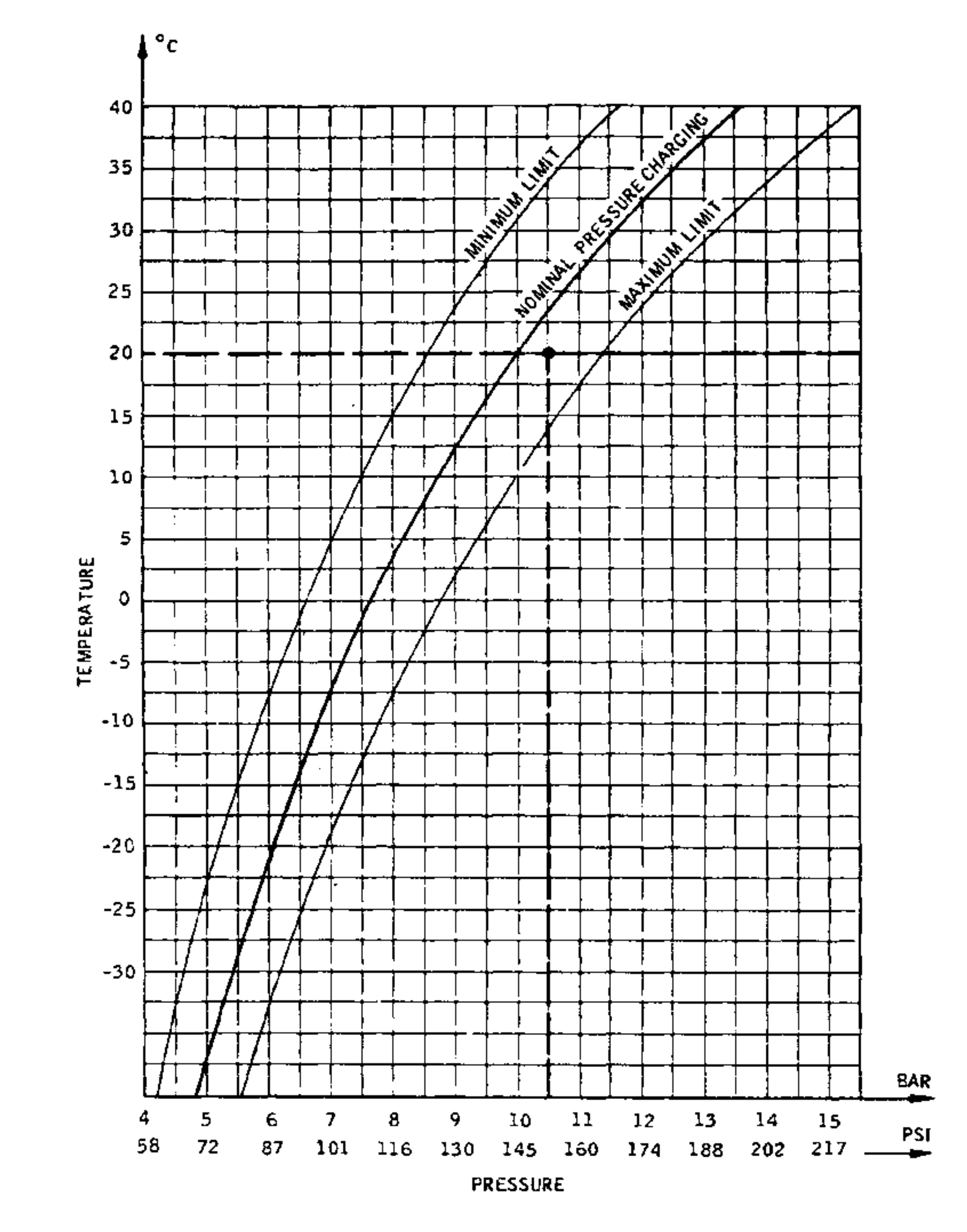


VALVE	CHAMBER
V1	CH1
V2	CH2-CH3
V3	CH4

Pitch damper arrangement
Figure 601



Pitch damper
Check of pressure in chambers CH2 - CH3
Figure 602



CMA 32 11 31 6 BEMO

Pitch damper
Check of pressure in chamber CH4
Figure 603

(b) Note ambient temperature as near as possible to pitch damper.

(c) On charging valve V2, remove valve cap using wrench 167600-78.

(d) Install wrenches C47845.

(e) Install pressure gauge ; 0 - 200 bars (0 - 2900 psi)

(f) Open valve and note pressure.

(g) Check on associated graph.

(g1) Mark value L = 78 mm (3.070 in.) on horizontal scale and from this point draw a vertical to the point of intersection with the ambient temperature isotherm.

(g2) From this point draw a horizontal through the minimum- maximum limit pressure curves.

(g3) Mark the recorded pressure on the pressure scale and from this point draw a vertical through the previously drawn horizontal.

(g4) The point of intersection should fall within the minimum-maximum limit zone.

(h) Close valve V2 and remove wrenches.

(i) Install valve cap using wrench 167600-78.

(2) Check of pressure in expansion chamber CH4 (valve V3).

(a) Note the ambient temperature as near as possible to pitch damper.

(b) On charging valve V3 remove valve cap using wrench 167600-78.

(c) Install wrenches C47845.

(d) Install pressure gauge ; 0 - 20 bars (0 - 290 psi)

(e) Open valve and note pressure.

(f) Check on associated graph.

(f1) Mark ambient temperature on vertical scale.

(f2) From this point draw a horizontal through the minimum - maximum limit pressure curves.

(f3) Mark the recorded pressure on the pressure scale and from this point draw a vertical trough the previously drawn horizontal.

(f4) The point of intersection should fall within the minimum-maximum limit zone.

(g) Close valve V3 and remove wrenches.

(h) Install valve cap using wrench 167600-78.

D. Close-Up

(1) Remove Safety Stay.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR

(2) Lower aircraft onto its wheels.

3. Check of Pitch Damper Charging Pressures With the Aircraft on its wheels

A. Equipment and Materials

DESCRIPTION	PART NO.
Rule 0 - 200 mm (0 - 7.87 in.)	
Thermometer - 40 to + 40 degrees C.	
Pressure gauge 0 - 200 bars (0 - 2900 psi)	
Air hydraulic Tool Kit	
Wrench - Bushed End	167600-78
Set of Concentric Tube Wrenches and Extension Tube	C47845

B. Pressure check (Ref. Fig. 601, 602 and 603)

NOTE : The charging pressures indicated on the pitch damper placards adjacent to the valves and repeated here below are nominal values ; that is for an ambient temperature of 20°C and with the sliding tube in neutral position.

Intercommunicating chambers CH2 and CH3 (valve 2)
Nitrogen pressure ; 134 bars (1945 psi).

Expansion chamber CH4 (valve 3)
Nitrogen pressure 10 bars (145 psi).

The pressure in intercommunicating chambers CH2 and CH3 is a function of pitch damper sliding tube travel (remaining stroke L) and the temperature.

(1) Check of pressure in intercommunicating chambers CH2 and CH3 (valve V2).

(a) Measure remaining stroke of sliding tube (dimension L).

(b) Note ambient temperature as near as possible to pitch damper.

(c) On charging valve V2, remove valve cap using

wrench 167600-78.

(d) Install wrenches C47845.

(e) Install pressure gauge ; 0 - 200 bars (0 - 2900 psi).

(f) Open valve and note pressure.

(g) Check on associated graph.

(g1) Mark value L on horizontal scale and from this point draw a vertical to the point of intersection with ambient temperature isotherm.

(g2) From this point draw a horizontal through the minimum-maximum limit pressure curves.

(g3) Mark the recorded pressure on pressure scale and from this point draw a vertical through the previously drawn horizontal.

(g4) The point of intersection should fall within the minimum-maximum limit zone.

(h) Close valve V2 and remove wrenches.

(i) Install valve cap using wrench 167600-78.

(2) Check of pressure in expansion chamber CH4 (Valve V3).

(a) Note ambient temperature as near as possible to pitch damper.

(b) On charging valve V3, remove valve cap using wrench 167600-78.

(c) Install wrenches C47845.

(d) Install pressure gauge ; 0 - 20 bars (0 - 290 psi)

(e) Open valve and note pressure.

(f) Check on associated graph.

(f1) Mark ambient temperature on vertical scale.

(f2) From this point draw a horizontal through the minimum-maximum limit pressure curves.

(f3) Mark recorded pressure on pressure scale and from this point draw a vertical through the previously drawn horizontal.

(f4) The point of intersection should fall within the minimum-maximum limit zone.

(g) Close valve V3 and remove wrenches.

(h) Install valve cap using wrench 167600-78.

C. Close-Up

Not applicable.

FRONT AND REAR BRAKE TORQUE ARM - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Each landing gear leg is equipped with four brake torque arms. Each brake torque arm is attached, at one end, to the shock absorber sliding tube and, at the other, to the brake unit torque plate. Each brake torque arm is equipped with two strain
R B sensors. The front torque arms operate in tension and are of
R B smaller cross section than the rear torque arms which operate
R B in compression.

R B CAUTION: IT IS POSSIBLE TO INADVERTENTLY INSTALL A REAR BRAKE
R B TORQUE ARM IN A FRONT BRAKE POSITION. CONFIRM
R B CORRECT P/N ON INSTALLATION.

2. Front and Rear Brake Torque Arms

A. Equipment and Materials

DESCRIPTION	PART NO.
Removable Chocks	
Nose and Main Gear Wheel Change Jack (Inflated Tyres)	07-20-0001
Tools - Brake Torque Plate Attachment	AM26676 A0121169
Fixture - Alignment Brake Disc	E920157000
Circuit Breaker Safety Clips	
"C" Spanner	254000-78
Electrical Ground Power Unit	
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	
Lockwire Dia. 0.5 mm (0.020 in.) (Corrosion Resistant Steel)	
Common Grease (Ref. 20-30-00, No. 051)	
Common Grease (Ref. 20-30-00, No. 057)	
Common Grease (Ref. 20-30-00, No. 058)	

DESCRIPTION	PART NO.
Adhesives (Ref. 20-30-00, No.344)	
Cleaning Fluid (Ref. 20-30-00, No.468)	
Cleaning Fluid (Ref. 20-30-00, No.469)	

B. Prepare

(1) Chock the aircraft wheels.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Jack up axle concerned.

(5) Remove brake cooling fan (Ref. 32-47-12, Removal/Installation).

(6) On centre console, place brake selector lever in PARK position.

(7) Remove wheel corresponding to torque arm to be removed (Ref. 12-37-00).

(8) Position tool E920157000.

(9) On centre console, place brake selector lever in NORM position.

(10) On centre console and at Captain's and First Officer's pedals, display warning notices prohibiting use of brakes.

(11) Remove side shroud concerned.
Retain screws (25) and washers (26) for reinstallation.
Retain screws (6) and washers (7) for reinstallation.

(12) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R WHEELS 5 & 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
R WHEELS 6 & 7 A/SKID & ADAPT AMPS SUP		G 188	G15
R WHEELS 2 & 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
R WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP		G 186	F10

C. Remove

(1) Remove strain sensor (17) cover (16).

(2) Remove electrical wiring attachment clamp.

(3) Disconnect and cap strain sensor electrical plug (24).

(4) On hinge point adjacent to shock absorber sliding tube.

(a) Cut lockwire and remove bolts (14) retain flange ring (11) and pin (8) for reinstallation.

(b) Remove lubricator (9) and locating washer (10).

(c) Remove nut (12) using spanner 254000/78 and retain seal support assembly (3) for reinstallation.

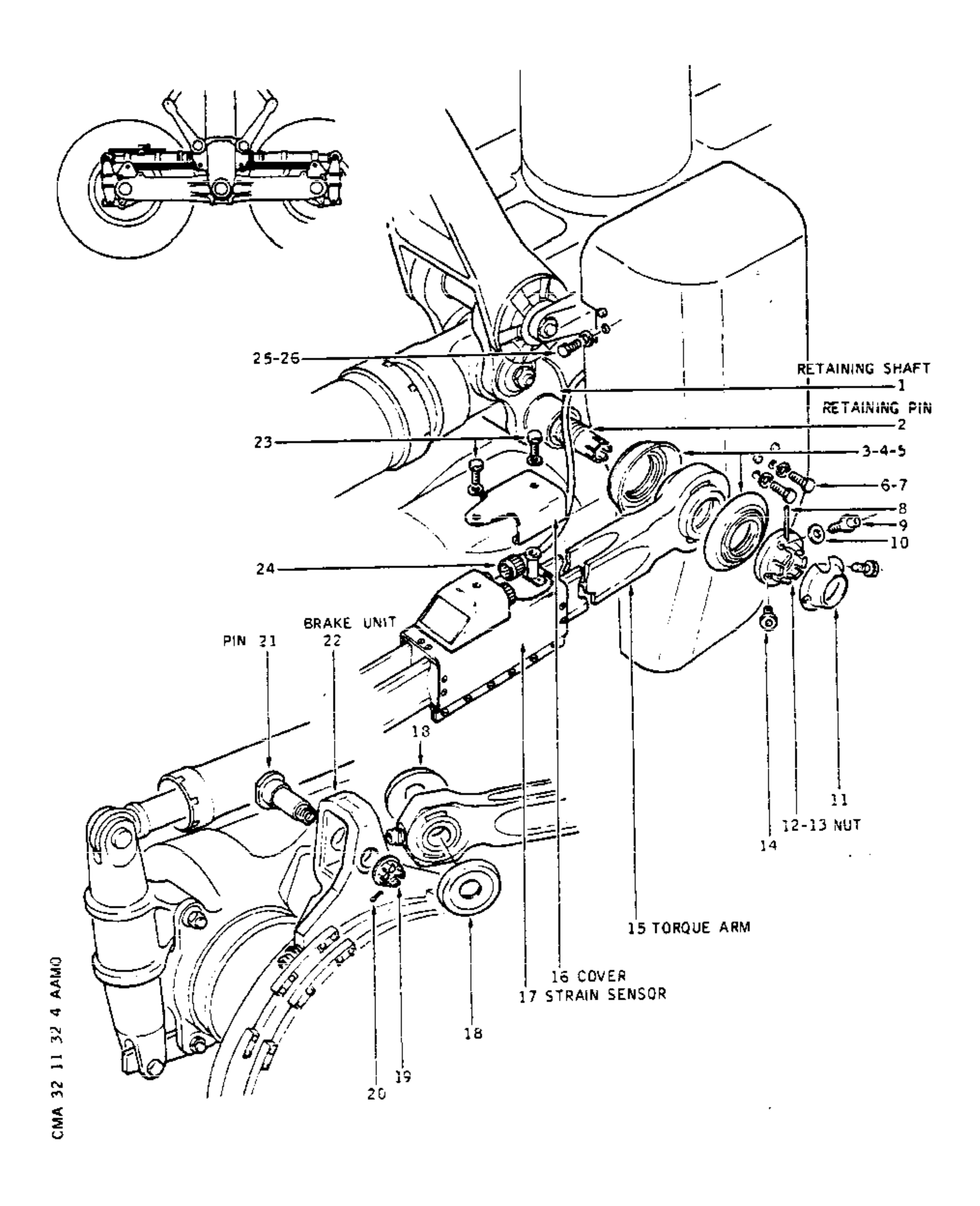
(d) Pull brake unit/torque arm assembly and remove torque arm (15) from retaining shaft (1).

(e) Withdraw seal support assembly (3).

(5) On brake unit hinge point

(a) Rotate brake unit/torque arm assembly to free pitch damper pin (21).

(b) Remove cotter pin (20).
Position tools AM26676 and A0121169 and remove



R

Brake Torque Arm
Figure 401

nut (19) then remove tools.

(c) Take weight off torque arm and remove pin (21).

(d) Remove torque arm and retain seals (18) complete for reinstallation.

D. Preparation of Replacement Component

(1) Check condition of lip seals (4) and 'O' rings (5) and discard if necessary.

(2) If lip seals (4) are to be discarded.

(a) Separate seals from seal supports (3) and retain seal supports for reinstallation.

(b) Carefully clean seal support (3) grooves with product No.469.

(c) After drying apply product No.344 in seal support (3) grooves so that lip seals (4) will adhere over entire contact surface. Install lip seals. Install equipped supports (3).

(3) Install two 'O' rings (5) per seal support.

(4) Check condition of seal (13) on nut (12). If necessary replace seal (13).

(5) Clean hinge points with product No.468.

E. Install

B CAUTION: IT IS POSSIBLE TO INADVERTENTLY INSTALL A REAR
RB BRAKE TORQUE ARM IN A FRONT BRAKE POSITION.
B CONFIRM THE CORRECT P/N ON INSTALLATION.

(1) On brake unit hinge point.

(a) Lubricate brake unit lug with product No.057.

(b) Position seals (18) either side of brake torque arm spherical bearing and insert spherical bearing into brake unit (22) lug.

(c) Lubricate pin (21) with product No.057.

(d) Check that seals (18) are in position and insert pin (21) with head facing pitch damper side.

(e) Position tools AM26676 and A0121169.

(f) Lubricate nut (19) with product No.057.

Wet Torque Value : 20 to 60 lbf.ft. (2.711 to 8.134 m.daN)

(g) Remove tools AM26676 and A0121169.

(h) Safety with a cotter pin.

(2) On hinge point at shock absorber sliding tube.

(a) Lubricate end of retaining shaft (1) with product No.051.

(b) Install a seal support (3) assembly.

(c) Position and push brake unit torque arm assembly to engage torque arm spherical bearing on free end of retaining shaft (1).

(d) Install second seal support (3) assembly.

(e) Apply product No.058 on thread of retaining pin (2).

(f) Screw on nut (12) until it comes into contact with seal support (3).

(g) If necessary slightly unscrew nut so as to insert locking pin (8) and ensure normal brake torque arm freedom of movement.

(h) Install pin (8) and flange ring (11).

(i) Attach flange ring (11) with bolts (14). Safety (14) with lockwire dia. 0.8 mm (0.032 in.) (Ref. 20-21-13).

(j) Fit a locating washer (10) to lubricator (9) and install on nut.

(3) Remove protective cap and connect strain sensor (17) electrical plug (24).

(4) Install electrical wiring attachment clamp.

(5) Install strain sensor cover using screws (23). Safety screws with lockwire dia. 0.5 mm (0.020 in.) (Ref. 20-21-13).

F. Test

(1) Remove safety clips and tags and reset circuit breakers

(2) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) In zone 215 remove rack panel 215DS.

(4) On electronics rack 9-215, on brakes overload control unit, place rotary switch in position corresponding to replaced torque arm.
On galvanometer, check that drift of strain sensor concerned does not exceed ± 450 mV.

(5) De-energize the aircraft electrical network and disconnect electrical ground power unit.

G. Close-Up

(1) Lubricate brake torque arm hinge points (Ref. 12-22-32)

(2) Install side shroud concerned.

(a) Install lower screws (6) and washers (7).
Torque screws (6) to between 0.9 and 1.1 m.daN (79.656 and 97.358 lbf.in.).

(b) Install upper screws (25) and washers (26).
Torque screws (25) to between 0.4 and 0.5 m.daN (35.403 and 44.253 lbf.in.).

(c) Safety screws (6) and (25) with lockwire dia. 0.8 mm (0.032 in.)(Ref. 20-21-13).

(3) On centre console, place brake selector lever in PARK position.

(4) Remove tool E92015700.

(5) Install wheel (Ref. 12-37-00).

(6) On centre console, place brake selector lever in NORM position.

(7) Install brake cooling fan (Ref. 32-47-12, Removal/Installation).

(8) Remove jack from axle.

(9) Remove warning notices.

(10) Install rack panel 215DS.

END OF THIS SECTION

NEXT

SHORTENING MECHANISM OUTER LINKAGE - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main shock absorber is retracted into the gear leg without being compressed by means of a mechanical shortening system during landing gear retraction.

The outer linkage shortening mechanism compensates for elastic deformation of crossbeam in order to protect the shortening rod during landing and ground roll.

2. Shortening Mechanism Outer Linkage

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, lifting capability greater than 81600 daN (183621 lbf)	07-10-0001
Safety jack adapter	D920113000
Jacking pad nose	D925370000
Balancing device - pyramid adapter - LH	D921485000

	DESCRIPTION	PART NO.
	Balancing device - pyramid adapter - RH	D921485001
	Pyramid adapter - lifting - LH	D924008000
	Pyramid adapter - lifting - RH	D924008001
	Safety stay	-
	Safety collars - main landing gear door-actuating cylinder	D921317000
	Safety sleeve - nose landing gear doors	E925002000
	Wrench - open end	151000/78
B B	Wrench - peg open end	179100/78 or 2-32-1513-1BA
	Extractor	179300/78
	Guide assembly	179400/78
	Extractor	249800/78
	Guide assembly	249900/78
	Wrench - tenoned socket	255600/78
B B	Wrench - open end	255700/78 or 2-32-1512-1BA
	Extractor	255800/78
B B	Wrench - open end	256200/78 or 2-32-1511-1BA
	Extractor	256300/78
	Circuit breaker safety clips	-

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Common Grease (Ref. 20-30-00, No.051)	
Glues and Adhesives (Ref. 20-30-00, No.344)	
Sealant (Ref. 20-30-00, No.352)	
Cleaning (Ref. 20-30-00, No.469)	
Access Platform 3.5 m (11 ft. 5 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Make certain that visor is not uplocked.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(7) Remove door and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) On First Officer's instrument panel, place landing gear Normal control lever in UP position and return it to NEUTRAL as soon as the main landing gear telescopic brace strut is unlocked. Prohibit actuation by displaying a warning notice in flight compartment.

(10) Place nose and main landing gear door operating handles in open position. Handles locked ; indicator pla-

tes showing red.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Install safety sleeves and collars on landing gear door actuating jacks.

(13) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

C. Remove (Ref. Fig.401 and 402)

(1) Disconnect spring rod lower attach fitting :

(a) Cut and remove lockwire, remove screw (23) and extract hinge pin (21) using extractor 256300/78.

(b) Remove spring rod from end fitting, retain seals (24).

(c) Attach spring rod temporarily to aircraft structure.

(2) Disconnect outer shortening rod from its link with the front crank

(a) Remove cotter pin, remove nut (10) using wrench 151000/78. Retain washer (11) and seal (12) for reinstallation.

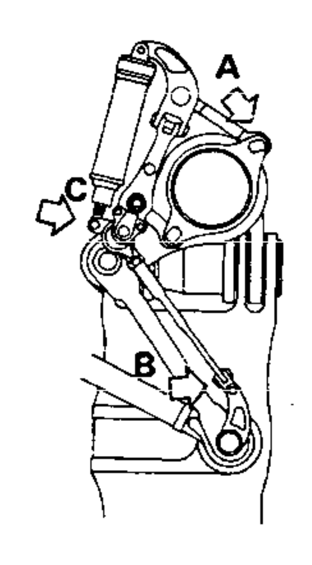
(b) Remove retaining pin (16).

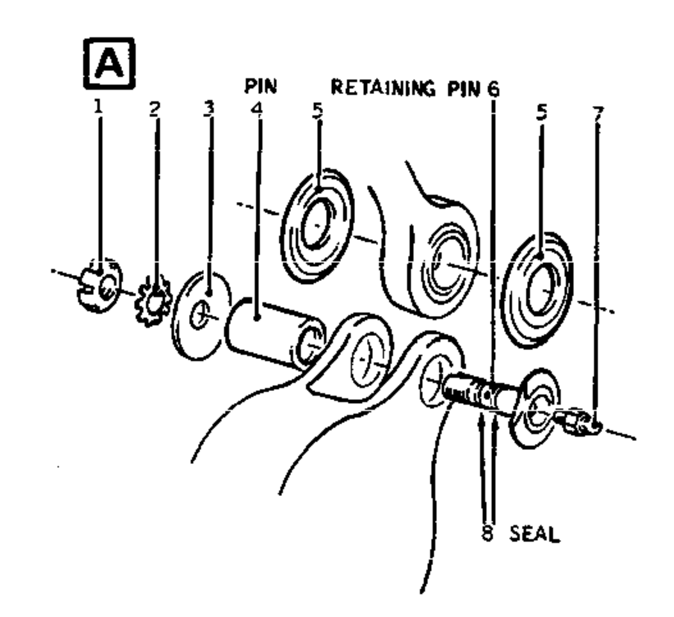
(c) Extract hinge pin (13) using extractor 249800/78.

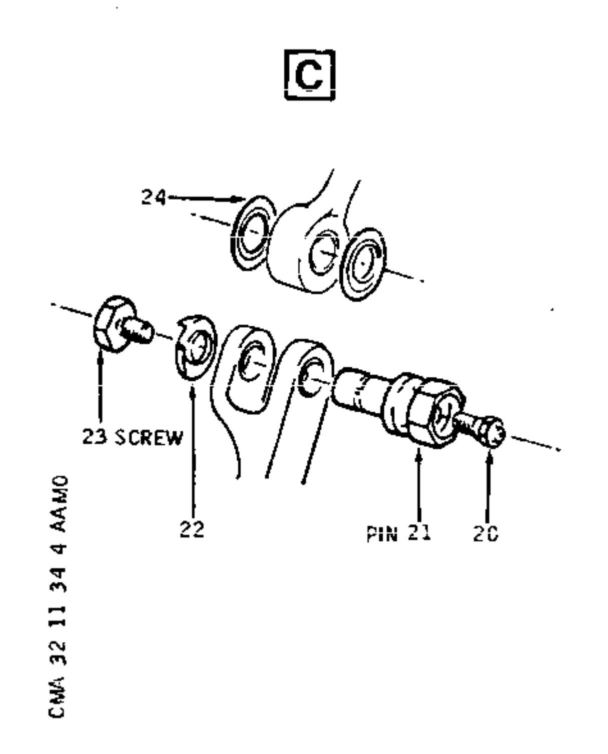
(d) Remove shortening rod and retain seal (14) for reinstallation.

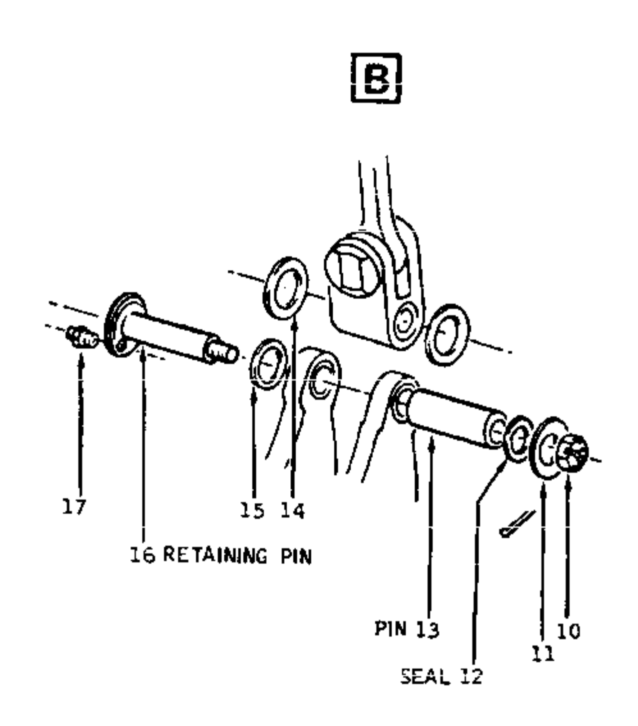
(3) Disconnect upper and lower compensation rods at attach point with compensation crank :

(a) Cut and remove lockwire and remove nut (1) using

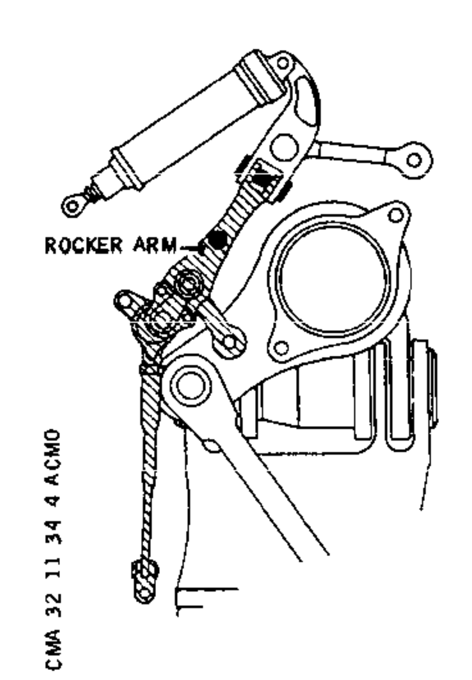


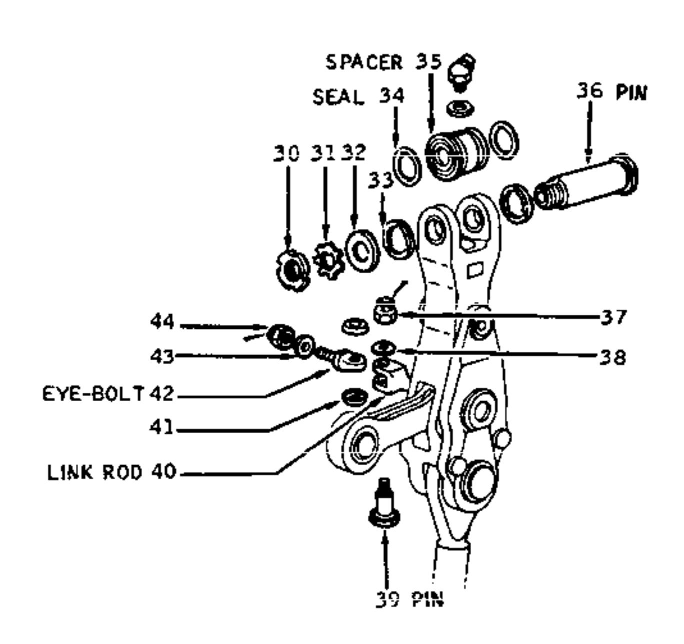






Shortening Mechanism Linkage
Attaching Hardware
Figure 401





Rocker Arm Attaching Hardware
Figure 402

wrenches 179100/78 and 256200/78. Remove lock washer (2) and washer (3).

(b) Remove retaining pin (6).

(c) Extract pin (4) using extractor 179300/78.

(d) Remove rod and retain seals (5) for reinstallation.

NOTE : The two hinge points are identical except for grease nipples.

(4) Disconnect link rod (40) from aircraft structure attach point.

(a) Remove cotter pins. Remove nuts (37) (44) retain washers (38) (43) for reinstallation.

(b) Remove pin (39), retain seals (41) for reinstallation.

(c) Remove eye-bolt (42).

(5) Disconnect rocker arm from aircraft structural attach point.

(a) Bend back tab washer and remove nut (30) using wrenches 255600/78 and 255700/78.
Discard tab washer (31) and retain washer (32) for reinstallation.

(b) Extract pin (36) using extractor 255800/78 and retain washers (33) and spacer (35) for reinstallation.

(6) Remove outer shortening rod.

D. Preparation of Replacement Component

(1) Check lip seals (5) (24) (41) for correct condition and replace if necessary, as follows :

- Remove rubber inserts
- Clean seal holders with Product No.469
- Apply adhesive Product No.344 to entire surface of seal holders and affix new rubber inserts.

(2) Check all seals for correct condition, and replace if necessary.

(3) Check all attaching hardware for correct condition. Replace any damaged or worn items.

(4) Assist assembly of pins (6) (4) (13) (16) (21) (36) and (39) by lubricating with Product No.051.

E. Install (Ref. Fig.401 and 402)

(1) Rocker arm-to-aircraft attach point.

(a) Install eye-bolt (42) washer (43) nut (44) at aircraft structure.
Do not tighten nut at this stage.

(b) Position spacer (35) fitted with seals (34) in rocker arm fork fitting.

(c) Place washers (33) either side of rocker arm fork fitting and position rocker arm in aircraft structure fork fitting.

(d) Install pin (36) washer (32) tab washer (31) and

nut (30).

(e) Tighten nut (30) using wrenches 255700/78 and 255600/78.
Torque to between 6 and 7 m.daN (44 to 52 lbf.ft.)

NOTE : Make certain that spacer (35) grease nipple is accessible from the rear.

(2) Connect link rod (40) to aircraft attach fitting.

(a) Install seals (41).

(b) Install pin (39), washer (38), and nut (37) (with nut facing upwards).
Torque to between 1.1 and 1.4 m.daN (90 and 125 lbf. in.).

(c) Tighten nut (44). Torque to between 4.7 and 5.5 m.daN (35 to 40 lbf.ft.).
Safety nut with cotter pin.

(3) Connect upper and lower compensation rods to their linkage with the conpensation crank.

(a) Install seals (5) on rod.

(b) Install pin (4) and retaining pin (6), using guide 179400/78.

(c) Remove guide 179400/78 by loosening retaining pin (6).

(d) Position retaining pin (6) and install washer (3) tab washer (2) nut (1).

Make certain that seals (8) and grease nipple (7) are in position.

(e) Tighten nut (1) using wrench 179100/78 and 256.200/78.
Torque to between 6 and 7 m.daN (44 to 52 lbf.ft.).
Safety nut with lockwire.

(4) Connect outer shortening rod to front crank.

(a) Install seal (14).

(b) Install pins (13) (16) using guide 249900/78.
Make certain that seal (15) and grease nipple

(17) are in position on retaining pin (16).

(c) Install seal (12) washer (11) and nut (10).

(d) Tighten nut, using wrench 151000/78.
Torque to between 2.5 and 3 m.daN (18 to 22 lbf.ft.).
Safety with cotter pin.

(5) Connect spring rod lower attach fitting.

(a) Lubricate rod end fitting, using Product No.051.

(b) Place seal (24) either side of spring rod and fit latter in rocker arm fork fitting.

(c) Install pin (21) position tab washer (22), make certain that grease nipple (20) is in position.

(d) Tighten screw (23). Torque to between 0.8 and 1 m.daN (70 to 88 lbf.in.).
Safety with lockwire.

(6) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(7) Remove safety collars from door jacks.

(8) Remove safety clips and tags and reset circuit breakers.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) Close doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down and depressurize Green Hydraulic system (Ref. 29-11-00, Servicing).

(14) On First Officer's instrument panel, make certain that

the four green arrows on gears position indicating unit are illuminated. (Gears downlocked).

(15) Install landing gear and door safety devices.

F. Test

(1) Check and if necessary adjust shortening mechanism outer linkage (Ref. 32-11-34, Adjustment/Test).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Close access doors and remove access platform.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR.

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

SHORTENING MECHANISM OUTER LINKAGE - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Adjustment of shortening mechanism outer linkage after removal/installation of the assembly or replacement of the spring rod.

B. Schedule check of adjustment.

2. Shortening Mechanism Outer Linkage

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113000
Jacking Pad Nose	D925370000
Balancing Device - Pyramid Adapter - LH	D921485000

	DESCRIPTION	PART NO.
	Balancing Device - Pyramid Adapter - RH	D921485001
	Pyramid Adapter - Lifting-LH	D924008000
	Pyramid Adapter - Lifting-RH	D924008001
	Safety Stay	
	Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
	Electrical Ground Power Unit	
	Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
	Safety Sleeve - Nose Landing Gear Doors	E925002000
	** ON A/C ALL	
R R	Key - Ground Opening - Main and Nose Landing Gear Doors	734116
	Support - Gauge	C47993
	Wrench - Open End	151000/78
	Extractor	249800/78
	Guide Assembly	249900/78
R R	"C" Spanner	258600/78 or 2-32-1517-1BA
R		
B B	Wrench - Peg Open End	258700/78 or 2-32-1514-1BA
R		
	Wrench - Tenoned Socket	258900/78

DESCRIPTION	PART NO.
Lockwire Dia 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	
Common Grease (Ref. 20-30-00, No.051)	
Sealants (Ref. 20-30-00, No.352)	
Safety Barriers	
Access Platform 3.5 m (11 ft 5 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Make certain that visor is not uplocked.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Connect hydraulic ground power unit.

(8) Position safety barriers prohibiting access to landing gear and door travel ranges.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(11) Remove locking caps and open gear doors by operating handles located on nose and LH main landing gear legs.

(12) On First Officer's instrument panel, place landing gear Normal control lever, in NEUTRAL position.

(13) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Install safety collars on main and nose gear door actuating jacks.

(15) Not applicable.

(16) Not applicable.

C. Adjustment Check

(1) Spring rod tension check (Ref. Fig. 501)

(a) With landing gear downlocked, measure the standout
R distance of spring rod, D1.

(b) Remove landing gear and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(c) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(e) Unlock main gear telescopic brace strut by means of hydraulic ground power unit, set at minimum delivery.

(f) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(g) Locate position in which spring rod moves to and fro freely at its hinge points, (neutral position) by moving base of landing gear.

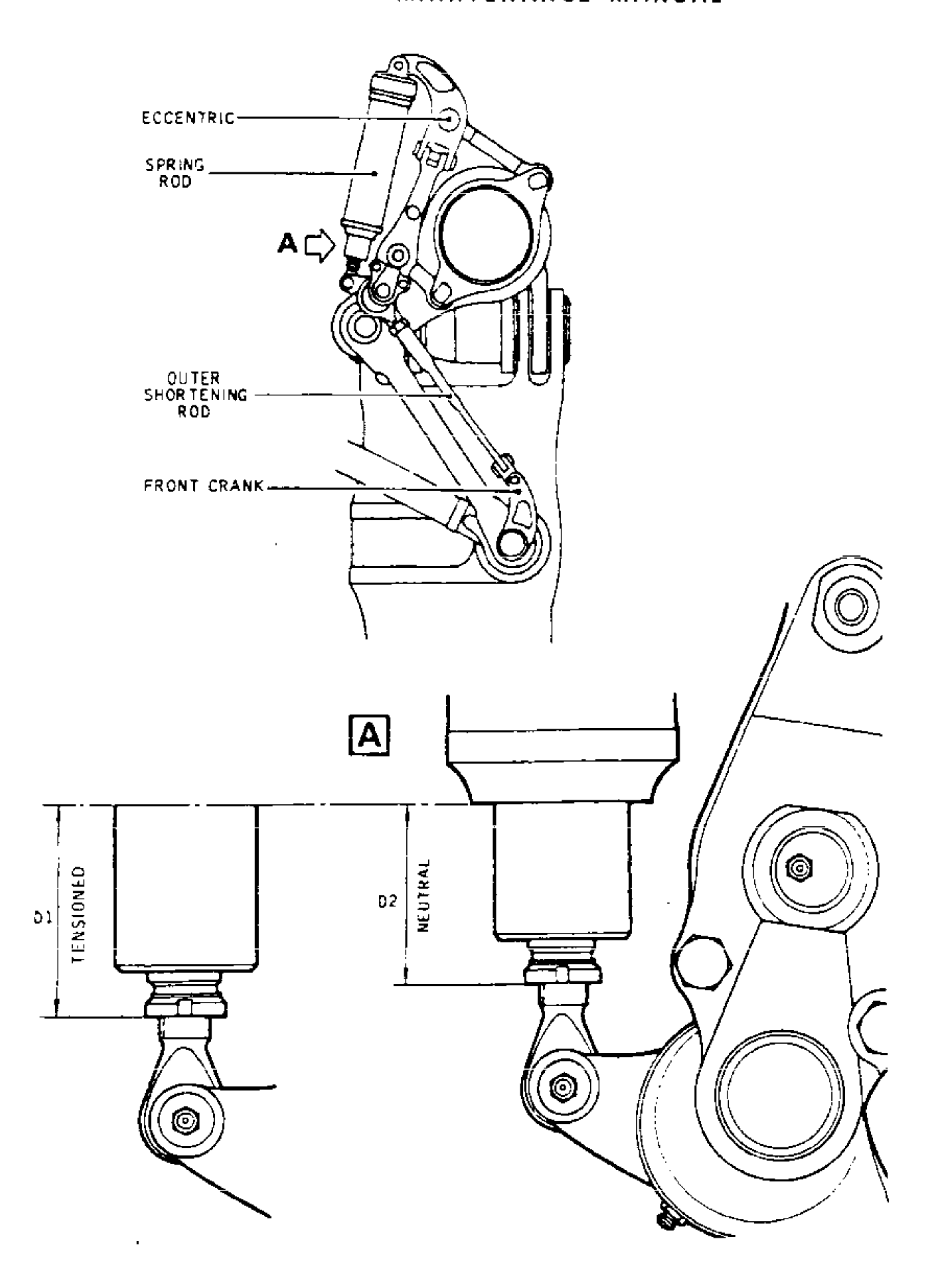
R NOTE : This position is approximately located at
R 3° from the gear downlocked position.

R (h) When this position is obtained, measure spring rod stand-out distance D2.

R (i) The difference in distances, D1-D2, shall be : 5 ± 2 mm (0.196 ± 0.078 in.).

R (j) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.



R

Spring Rod Tension Measurement
Figure 501

R (k) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position. Make certain that landing gear locks.

R (l) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Control of shortening and over-shortening during landing gear uplock sequence (Ref. Fig.502 and 503).

(a) On aircraft outboard side, remove both shock absorber lower bearing retaining pin attach screws.
R Attach depth gauge support C47993 by means of these screws.

R (b) On aircraft outboard side remove protective cap from servo-valves.
R The safety valve body serves as a stop for the depth gauge.

(c) Measure distance between base of depth gauge and stop (Dimension E).

(d) Spread a 3 mm (0.12 in.) layer of plasticine on retraction shaft crank to obtain clearance J between crank and outer shortening rod.

(e) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

<u>WARNING</u> : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(f) On First Officer's instrument panel, place landing gear Normal control lever in UP position and make certain that landing gear is uplocked.

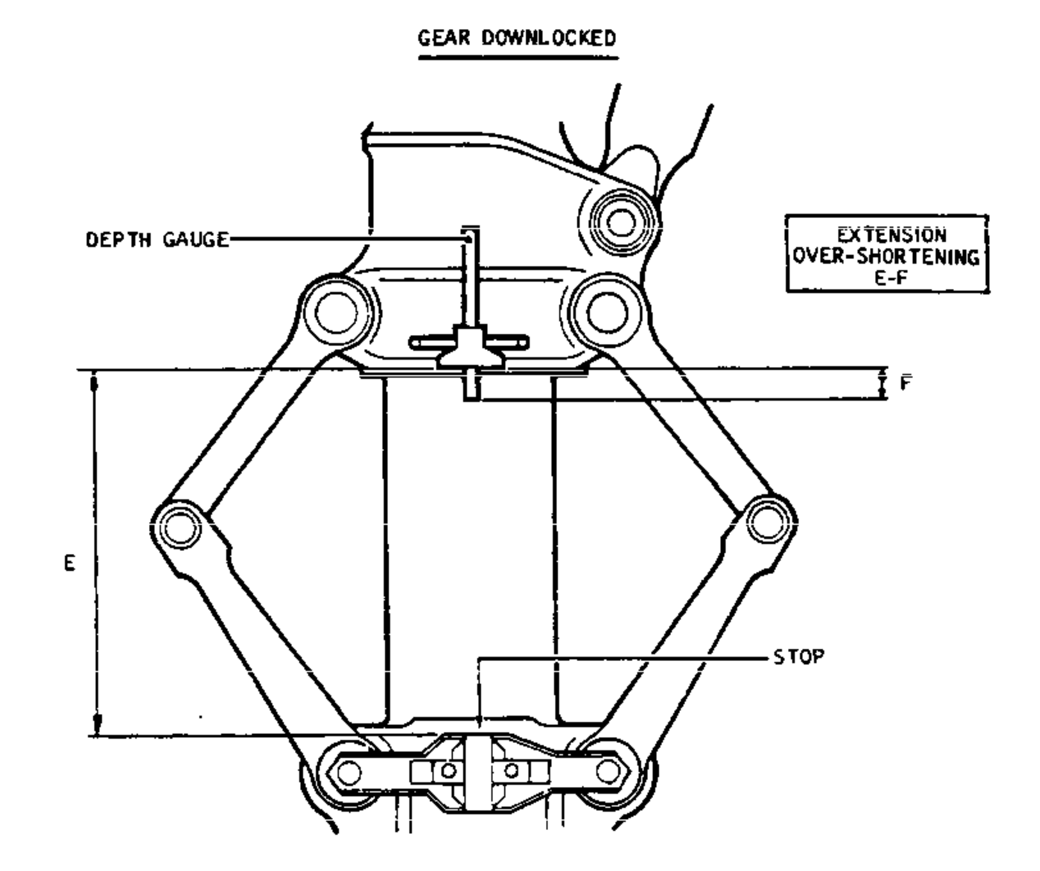
(g) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

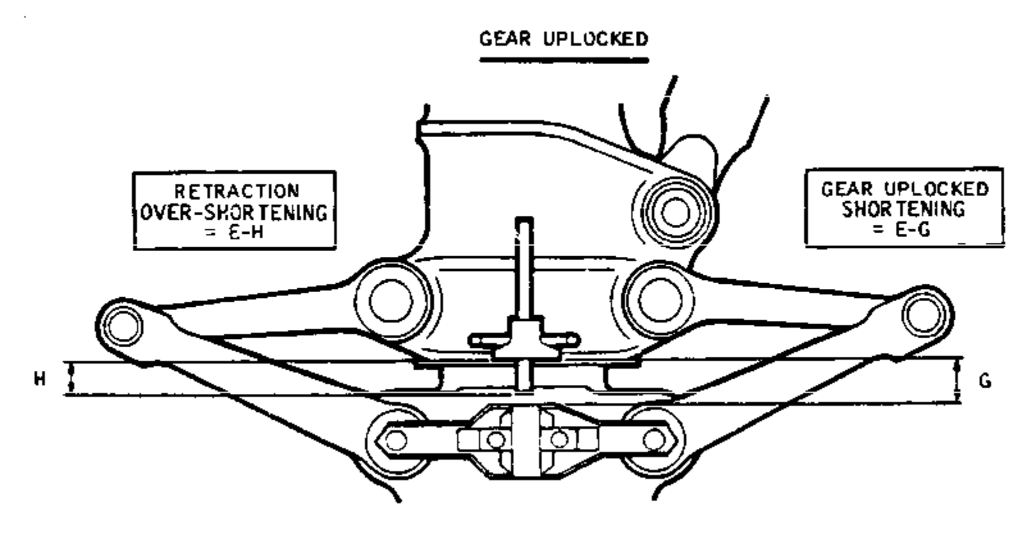
(h) Note dimension H on gauge. The uplock sequence
R over-shortening displacement E-H shall be between:

R 510 and 530 mm (20.078 and 20.866 in.)

R (i) Push gauge back until it comes into contact with stop, and note dimension G on gauge.
R Retraction travel E-G shall be between :

R 508 and 523 mm (20 and 20.590 in.)



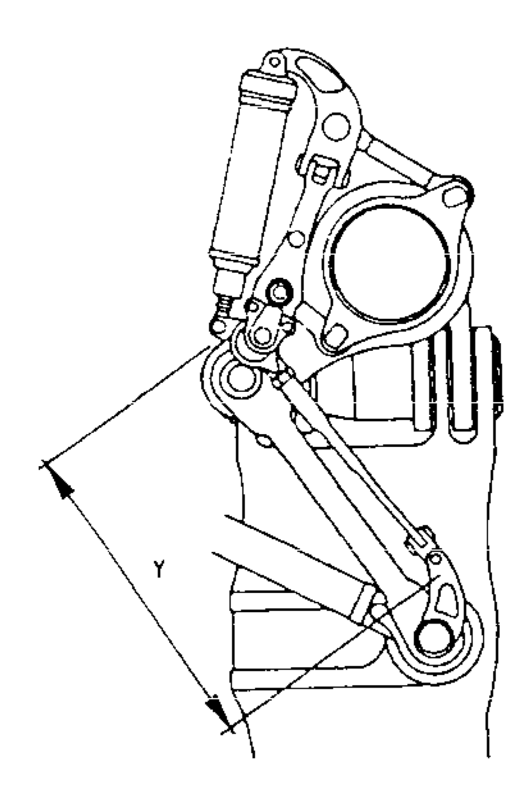


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Shortening and Over-shortening Measurement
Figure 502

R (j) Measure length of the outer shortening rod
R (distance Y) (Ref. Fig. 502A).

R NOTE : This measure will be used in paragraph
R 2-D-(2)-(c)-(c1).



DIMENSION Y =

464 + 40 + 17.5 ± 5 mm

(18.267 + 1.574 + 0.689) ± 0.196 in.

OR

521.5 ± 5 mm

(20.530 ± 0.196 in.)

R Outer Shortening Rod Measurement
R Figure 502A

(3) Check of over-shortening during landing gear extension (Ref. Fig.502)

(a) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(b) Make certain that gauge is still in contact with stop.

<u>WARNING</u>: MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(c) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position, and make certain that landing gear downlocks.

With gear downlocked, place landing gear Normal control lever in NEUTRAL position. Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) Note dimension F on gauge.

Downlock sequence over-shortening travel E-F must be between:

510 and 530 mm (20.079 and 20.865 in)

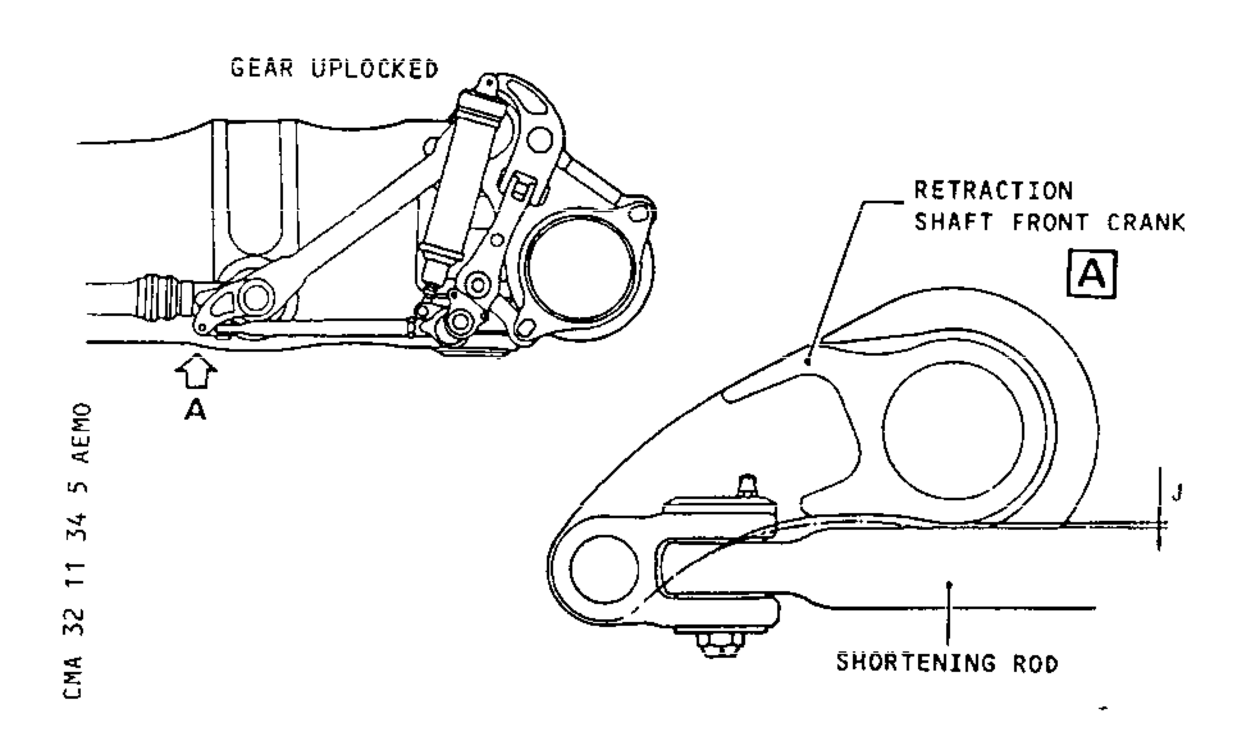
(e) The difference between extension and retraction over-shortening travel must be less than 15 mm (0.59 in).

(f) Measure thickness of plasticine. Clearance J
R (Ref. Fig. 503) between the outer shortening rod
R and crank must be greater than 2 mm (0.078 in).

(g) If one or several of the values D1-D2, E-H, E-G, E-F or J is or are out of tolerance, carry out adjustment in accordance with para. D.

D. Adjust

<u>NOTE</u>: The aim of adjustment is to obtain the maximum length of the over-shortening and shortening travel consistent with a spring rod tension between 3 and 7 mm (0.118 and 0.275 in).



Measurement of Clearance Between
Outer Shortening Rod and Front Crank
Figure 503

R (1) Principle of Adjustment (Ref. Fig. 504, 505)

R R R <u>NOTE</u>: Adjustment is effected by action on the length of the external retraction rod and/or the position of the eccentric bush.

R (a) Adjustment Criteria

R (a1) A 180 degree rotation of outer shortening rod upper end fitting results in a 3 mm (0.118 in.) variation in spring rod tension.

(a2) The eccentric bush is set as follows:

- through twelve numbered slots
- a two-position lock which provides 24 settings spaced at 15° intervals

(Theoretical setting = A8 for RH leg,
A4 for LH leg)

(b) Effect of variation in length of outer shortening rod.
An increase in its length results in :

- reduced spring rod tension
- an increase in over-shortening and shortening travel
- a reduction in clearance J.

(c) Effect of adjustment of the eccentric bush. Viewed from front, a clockwise rotation of the RH landing gear eccentric bush, and an anti-clockwise rotation of the LH landing gear eccentric bush, results in :

- increase spring rod tension
- an increase in over-shortening and shortening travel
- a reduction in clearance J.

(2) Example of using the diagram (Ref. Figs. 504, 505)

Let us consider the following situations:

- D1-D2 = 1 mm (0.039 in.)
- Eccentric bush in position B4 (LH landing gear).

(a) Determine the variation in length of the external shortening rod and/or the new position of eccentric bush:

(a1) Set the value 1 mm (0.039 in.) on the "SPRING ROD TENSION" scale, the point A is obtained.

(a2) Project this point A horizontally on the curve "SPRING ROD TENSION/OVER-SHORTENING AND SHORTENING TRAVEL", the point B is obtained.

(a3) Project point B vertically on the "LENGTH OF EXTERNAL SHORTENING ROD" scale, the point C is obtained.

(a4) Initially it is to be assumed that the length of the external rod is to be increased by 1 turn, the point D is obtained.

R (a5) Project point D on the preceding curve and
R point E is obtained.

R (a6) Project point E horizontally on the "SPRING ROD
R TENSION" scale, the point F is obtained.

R (a7) Calculate the algebraic deviation between the
R theoretical nominal value +5 mm (0.196 in.) and
R the plot value (Point F = -5 mm (0.196 in.)
R (ie: 10 mm (0.393 in.) from first setting).

R (a8) Still on the "SPRING ROD TENSION" scale, at the
R starting value +1 mm (0.039 in.) (Point A), add
R the above deviation 10 mm (0.393 in.) and point
R G is obtained; this equals +11 mm (0.433 in.).

R (a9) Project point G horizontally on the "ECCENTRIC
R POSITION" curve and point H is obtained.

R (a10) Project point H vertically on the "ECCENTRIC
R POSITION" scale and point J is obtained.

R (a11) On the above scale, read the eccentric
R position which is nearest to point J, in this
R case A3.

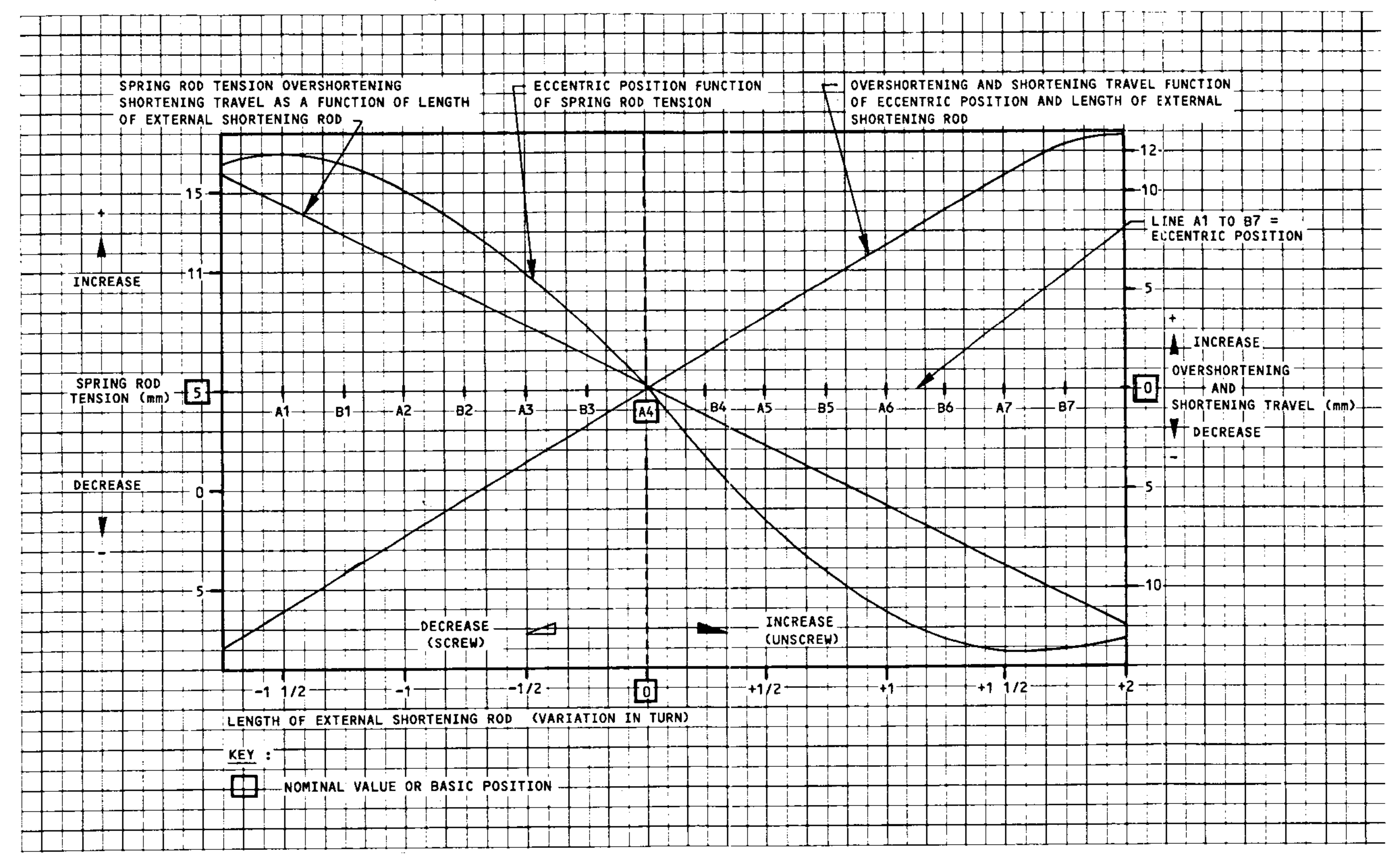
R (b) Determine the development of the over-shortening and
R shortening travel.

R (b1) As a function of the new length of the external
R shortening rod:

R - Project points B and E vertically on the
R "OVER-SHORTENING AND SHORTENING TRAVEL"
R curve; the points B' and E' are obtained.

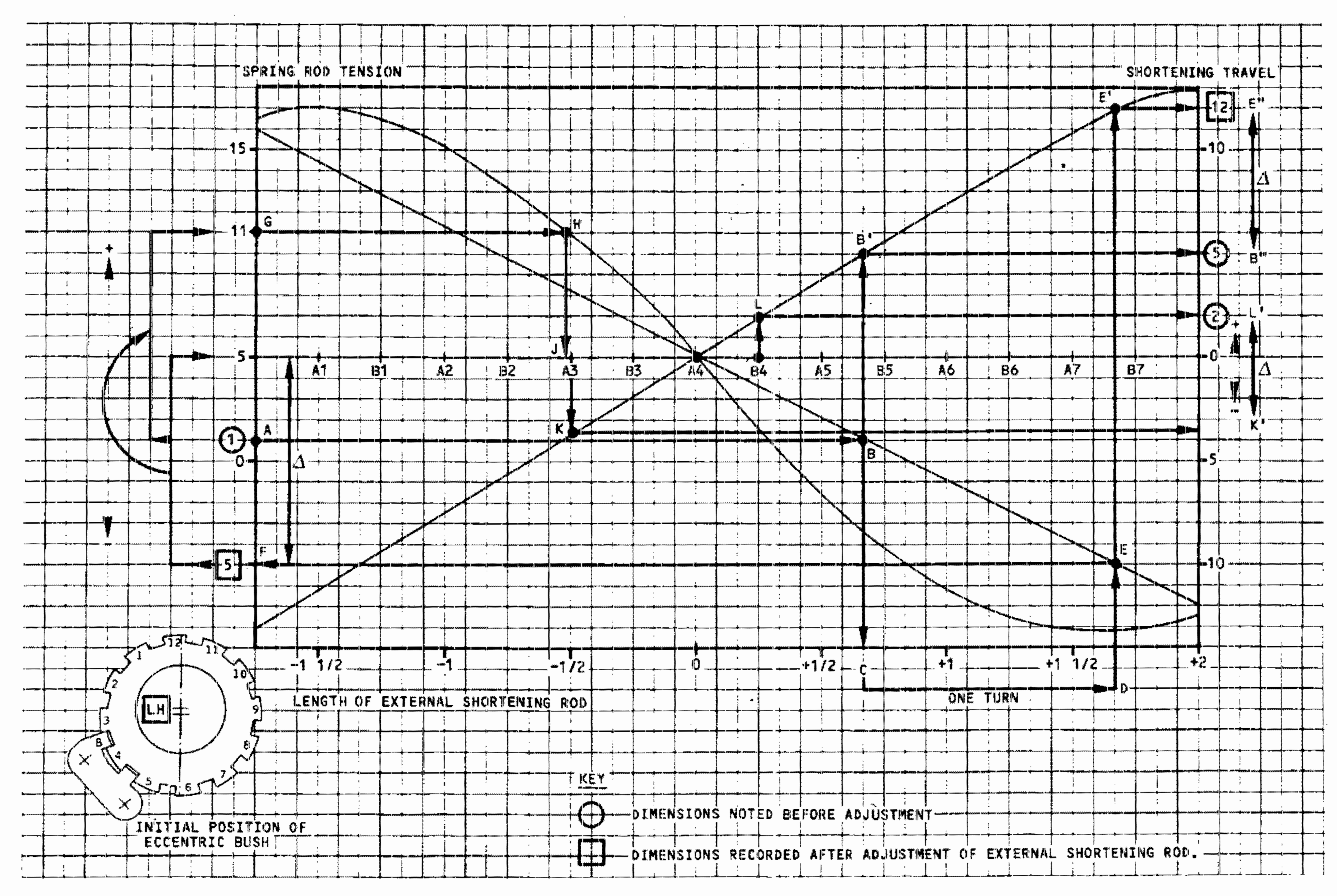
R - Project points B' and E' horizontally on the
R "OVER-SHORTENING AND SHORTENING TRAVEL"
R scale; the points B" and E" are obtained.

R - Note the difference between E" (+12 mm =
R 0.472 in.) and B" (+5 mm = 0.196 in.),
R ie: 7 mm (0.275 in.). This is the increase
R in shortening and over-shortening travel due
R to 1 turn extension of external shortening
R rod.



R

Curves Legend
Figure 504



R

Example of Adjustment
Figure 505

(b2) As a function of the new eccentric bush position:

- Project the new eccentric bush position (A3) vertically on the "OVERSHORTENING AND SHORTENING TRAVEL" curve; point K is obtained.

- Project point K horizontally on the "OVERSHORTENING AND SHORTENING TRAVEL" scale; point K' is obtained.

- Vertically project the initial eccentric position plotted on the aircraft (B4 in this example) on the "OVERSHORTENING AND SHORTENING TRAVEL" curve; point L is obtained.

- Project point L horizontally on the "OVERSHORTENING AND SHORTENING TRAVEL" scale; point L' is obtained.

- Note the difference between points L' (+2 mm = 0.078 in.) and K' (approximately -3 mm = -0.118 in.); ie: -5 mm (-0.196 in.). This represents the reduction in travel due to moving the eccentric bush from B4 to A3.

(b3) The net effect on travel will therefore be:

a-b = 7-5 = 2 mm (0.275 - 0.196 = 0.079 in.).

(c) Check compatibility of the calculations with aircraft status.

(c1) Check that once the length of the rod has been changed (+ one turn in this example) it remains within the range of 521.5 ± 5 mm (20.530 ± 0.196 in.) (Dimension Y) see 2-C-(2)-(j).

(c2) Check that the "OVERSHORTENING AND SHORTENING TRAVEL (E-F, E-G, E-H)" remains within the ranges specified in paragraphs 2-C-(2) and 2-C-(3).

NOTE: If these conditions are not met, review the calculation in paragraph 2-D-(2).

R (d) If the results are acceptable, adjust the outer
R shortening rod and/or place the eccentric in the new
R position, then repeat the checks as per paragraph
2.C

R (3) Adjustment.

R (a) Using the diagram (Ref. Fig. 506), in accordance
R with the above example, determine the corrections
R to be made to the length of the outer shortening
R rod and/or correction of the eccentric bush, then
R proceed as follows:

R (b) Adjustment of outer shortening rod (Ref. Fig. 507).

R (b1) Bend back tab washer and remove key (3)
R securing locknut (1).

R (b2) Disconnect outer shortening rod lower
R attachment
R - remove cotter pin and remove nut (6),
R retain washer (8) and seal (5). Use
R wrench 151000/78.

R - Remove attach pin (12).

R - Extract pin (9) using extractor 249800/78.

R - Remove shortening rod and retain seal
R washers (10) for reinstallation.

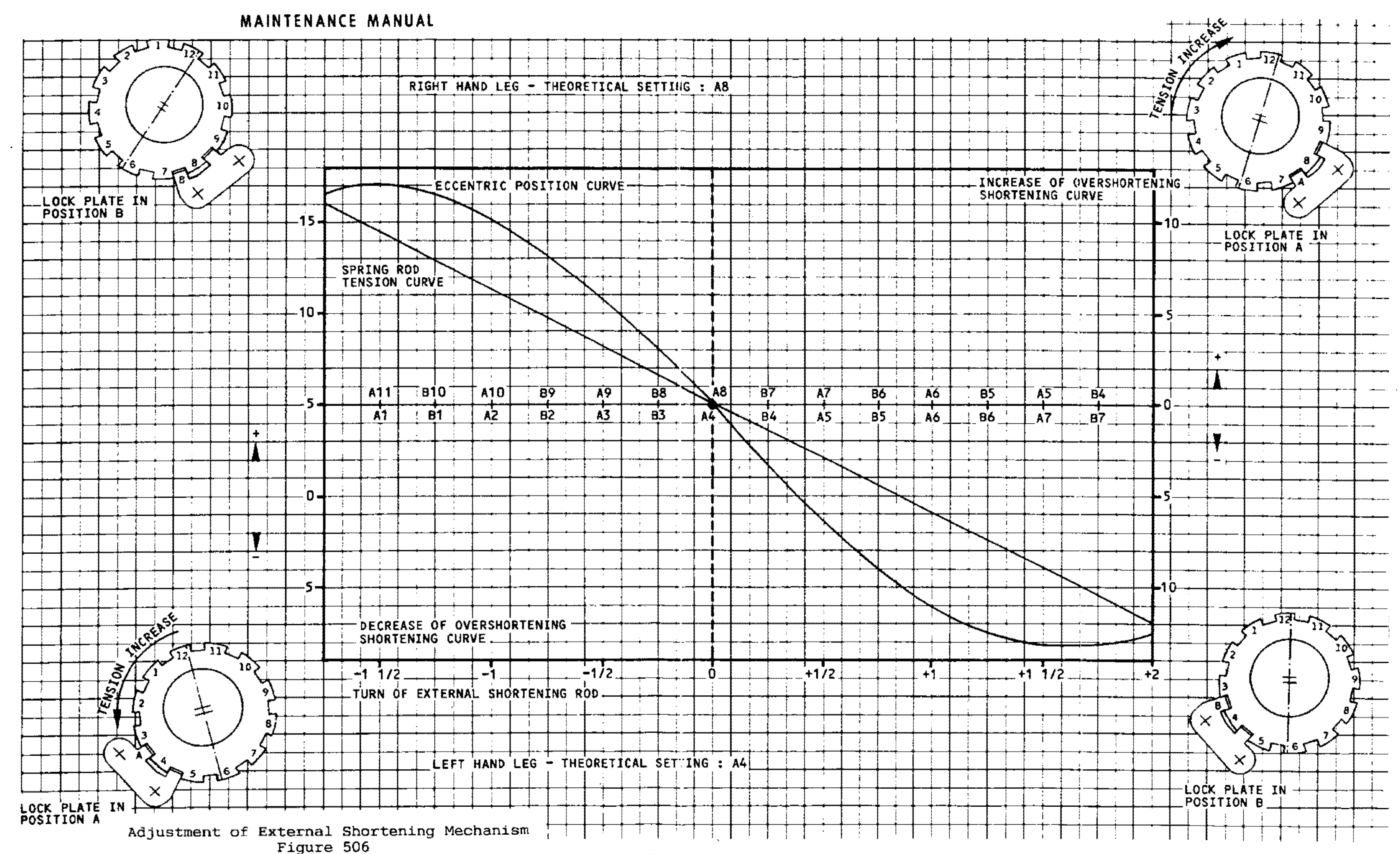
R (b3) Lengthen or shorten rod as calculated in
R paragraph 2D-(2)-(a) and verify that the
R dimension Y is in the range 521.5 ± 5 mm
R (20.530 ± 0.196 in.).

R (b4) Record dimension of outer shortening rod
R (this will be used for a further adjustment).

R (b5) Reinstall outer shortening rod:

R - Make certain that landing gear is unlocked.

R - Install key (3). Do not safety locknut (1)
R at this stage.



Adjustment of External Shortening Mechanism
Figure 506

R

- Connect outer shortening rod at its link with the front crank.

- Install seal washers (10)
- Lubricate pins (9) and (12) using Product No.051.
- Install pins (9) and (12) using guide assembly 249900/78. Make certain that seal (11) and grease nipple are fitted to securing pin (12).
- Install seal (5), washer (8), nut (6).
- Tighten nut, using wrench 151000/78. Torque to between 2.5 and 3 m.daN (18 to 22 lbf ft).

(c) Adjustment of eccentric bush (Ref. Fig. 506, 507 and 508).

NOTE: To facilitate the unlocking of eccentric bush, refer to paragraphs 2-C-(1)-(b) to 2-C-(1)-(g).

(c1) Remove panel 572 or 672 to gain access to eccentric bush.

- Cut and remove lockwire, remove screws (23) securing lock plate (24). Remove lock-plate.

- Release eccentric nut (25) using wrench 258700/78 and wrench 258900/78.

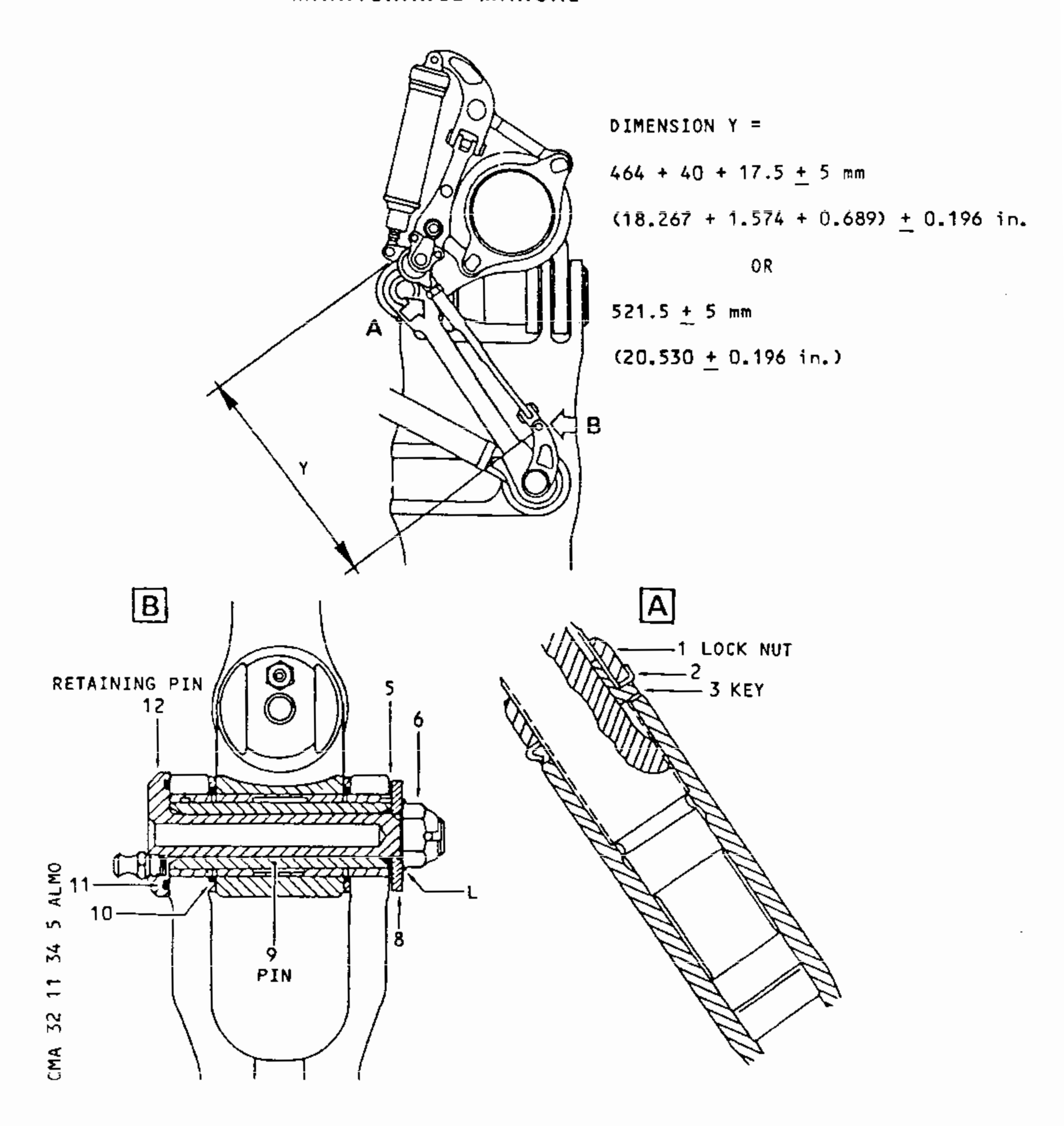
- Cut and remove lockwire, remove nuts (20), retain washers (21) for reinstallation, remove lockplate (22).

- Turn eccentric bush in the direction and to the value required, using spanner 258600/78 following diagram (Ref. Fig. 506).

- Install lock plate (22), washers (21), nuts (20). Tighten nuts.

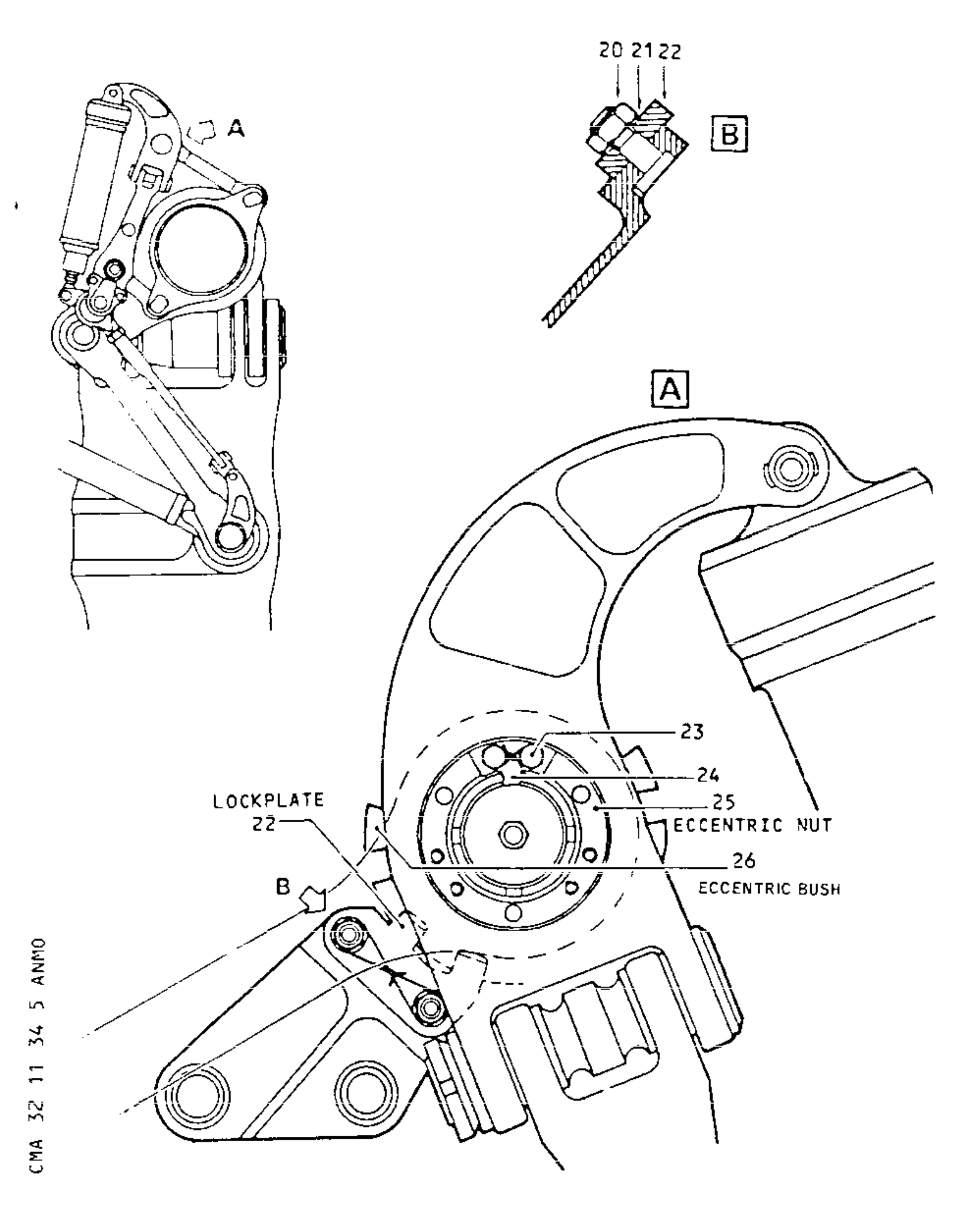
- Tighten eccentric bush nut (25) using wrench 258700/78. Torque to between 3 and 5 m.daN (22 to 37 lbf ft).

- Install lock plate (24) and secure with screw (23).



Outer Shortening Rod Adjustment
Figure 507

R



CMA 32 11 34 5 ANMO

Aircraft Structure Attach Rod-to-Outer Shortening
Mechanism Eccentric Bush
Figure 508

R

NOTE: It may be necessary to move the attachment fitting outboard to allow access to the eccentric bush.

(d) Prepare for Check after Adjustment.

(d1) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(d2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(d3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.
Make certain that landing gear locks.

(d4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(d5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(e) Repeat adjustment check following paragraph 2-C.

(4) Close-up after adjustment (Ref. Fig. 507 and 508).

(a) Eccentric bush.

(a1) Safety nuts (20) with lockwire.

(a2) Safety screw (23) with lockwire.

(b) Outer shortening rod.

(b1) Safety nut (6) with cotter pin and apply a ring of mastic, Product No.352, to the area marked L.

(b2) Install tab washer (2) and tighten locknut (1) and torque to between 10 and 12 m.daN (74 to 89 lbf ft). Bend back tab.

R (c) Remove gauge support C47993 and install shock
R absorber lower bearing pin retaining screws.

R NOTE: Make certain that one of the screws is
R fitted with a grease nipple.

R (d) Install servo-valve cover. Safety screws with
R lockwire (Ref. 20-21-13).
R
R

R (e) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

R (f) Remove safety collars from door actuating jacks.

R (g) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (h) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

R (i) Close doors by operating handle located on nose and LH main landing gear leg. Install locking cap.

R

(j) On First Officer's instrument panel, place landing
R gear Normal control lever in NEUTRAL position.

R (k) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (l) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated.
(Gears downlocked).

R (m) Install landing gear and shortening mechanism safety devices.

E. Test

(1) Carry out a landing gear retraction and extension (Ref. 32-31-00, Adjustment/Test).

F. Close-Up

(1) Disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors and install panel 572AT or 672AT.

R (4) Remove safety barriers and access platform.

R WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS
R CLEAR.

R (5) Remove safety stay.

R (6) Lower aircraft onto its wheels.

P/No. S/No.	RECORD TABLE		
Aircraft Registration:	Side: Left Right	Date:	
Eccentric Position: Outer Shortening Rod Length: (Y) :	Initial	New	

Spring Rod Tension (Ref. Figure 501)

D1 =

D2 =

D1 - D2 = (Nominal 5 ± 2mm.)

Shortening & Overshortening during Uplock Sequence (Ref. Figure 502)

E =

H =

E - H = (Nominal 510 - 530 mm)

G =

E - G = (Nominal 508 - 523 mm)

Overshortening during Extension Sequence (Ref. Figure 502)

F =

E - F = (Nominal 510 - 530 mm)

△ = (Maximum 15 mm)

J = (Minimum 2 mm)

Notes:

EXTERNAL LINKAGE SPRING ROD - REMOVAL/INSTALLATION

R WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON
R THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE
R ACTUAL POSITION OF THE LANDING GEAR

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The double acting external linkage spring rod is attached to the aircraft structure and acts upon the eccentric lever hinged at the lower part of the rocker arm.

2. External Linkage Spring Rod

Equipment and Materials

	DESCRIPTION	PART NO.
	Jack - Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
	Safety Jack Adapter	D920113000
	Jacking Pad - Nose	D925370000
R	Balancing Device - Pyramid Adapter - LH	D921485000
R	Balancing Device - Pyramid Adapter - RH	D921485001
R	Pyramid Adapter - Lifting-LH	D924008000
R	Pyramid Adapter - Lifting-RH	D924008001
	Safety Stay	
	Safety Collars - Main Landing Gear	D921317000

DESCRIPTION	PART NO.
R Door-Actuating Cylinder	
Safety Sleeve - Nose Undercarriage Doors	E925002000
**ON A/C ALL	
Electrical Ground Power Unit	
Wrench Open End	179500/78
Extractor	256300/78
Guide Assembly	256500/78
Circuit Breaker Safety Clips	
Common Grease (Ref. 20-30-00, No.051)	
R Glues and Adhesives (Ref. 20-30-00, No.344)	
Cleaning (Ref. 20-30-00, No.468)	
Safety Barriers	
Access Platform 3.5 m (11 ft. 5 in.)	

R

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

R (4) Position safety stay.

(5) Make certain that visor is not uplocked.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Position safety barriers to prevent access to landing gear and door travel ranges.

(8) Remove landing gear and shortening mechanism safety devices.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(10) On First Officer's instrument panel, place the landing gear Normal control lever in UP position and return it to NEUTRAL as soon as the main gear telescopic brace strut is unlocked.
Prohibit actuation by displaying a warning notice in flight compartment.

(11) Remove locking cap and place nose and main landing gear door operating handles in open position ; handles locked, indicator plates showing red.

(12) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Install safety collars.

(14) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

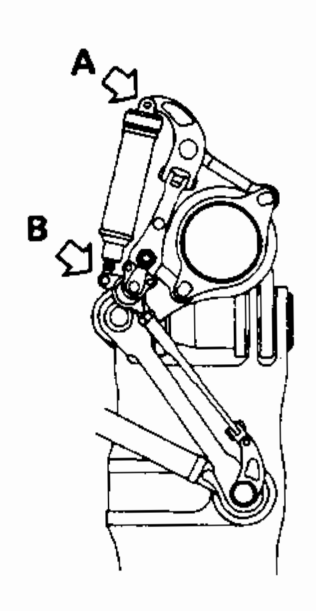
C. Remove (Ref. Fig. 401)

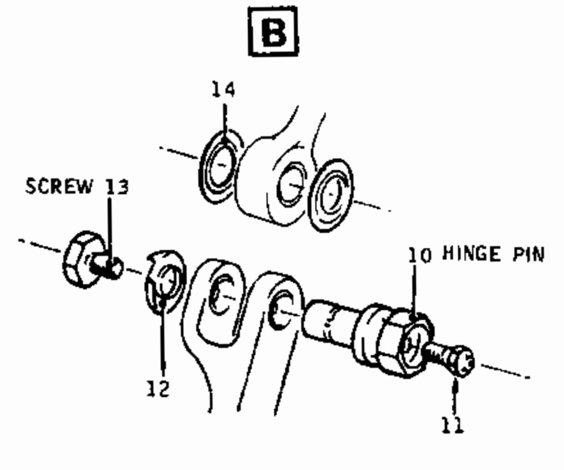
(1) Find the position at which the external linkage spring rod moves to and fro freely at its hinge points, by pushing on the bottom of the landing gear.

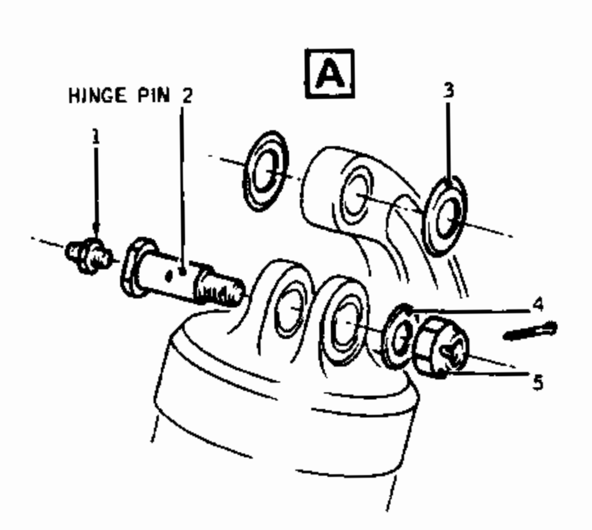
NOTE : This position is situated at 3° ± 1° from landing gear downlocked position.

(2) Disconnect spring rod lower attach fitting.

(a) Bend back tab of lock washer (12) and remove screw (13) using wrench 179500/78. Lock washer (12) shall be discarded.







CMA 32 11 35 4 AAM0

R External Linkage Spring Rod Attachments
Figure 401

(b) Remove hinge pin (10) using extractor 256300/78.

(c) Disconnect spring rod end fitting and retain lip seals (14) for reinstallation.

(3) Disconnect spring rod upper attachment :

(a) Remove cotter pin, remove nut (5) using wrench 179500/78 retain washer (4) for reinstallation.

(b) Remove hinge pin (2) using extractor 256300/78.

(c) Disconnect spring rod and retain lip seals (3) for reinstallation.

D. Preparation of Replacement Component

(1) Check lip seals for correct condition.
If necessary, seals shall be replaced as follows :

(a) Detach rubber seals from seal holders.

(b) Clean seal holders with Product No.468.

(c) Apply adhesive Product No.344 to seal holders and attach rubber seals.

E. Install

(1) Connect spring rod upper attachment :

(a) Install spring rod together with lip seals (3). Seals shall be installed at each side of structure end fitting.

(b) Install hinge pin (2) with head facing rear of aircraft. Make certain that grease nipple (1) is in position.

(c) Install washer (4) install nut (5) and torque to between 0.2 and 0.5 m.daN (18 and 44 lbf.in.). Safety nut with cotter pin.

(2) Connect spring rod lower attachment :

(a) Install spring rod together with lip seals (14), using guide assembly 256500/78.
Seals shall be installed at each side of spring rod end fitting.

(b) Insert hinge pin (10) (with head facing rear of

aircraft). Make certain that grease nipple (11) is in position.

(c) Install lock washer (12), screw (13). Torque to between 0.8 and 1 m.daN (78 and 88 lbf.in.). Safety screw by bending down lock washer tab.

(3) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(4) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(5) Remove safety collars from door actuating jacks.

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Remove safety clips and tags and reset circuit breakers

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position. Make certain that landing gear locks.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(9) Close doors using operating handles located on nose and LH main landing gear legs. Install locking caps.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated. (Gears downlocked).

(13) Install landing gear and shortening mechanism safety devices.

F. Test

Check adjustment of landing gear shortening mechanism outer linkage (Ref. 32-11-34, Adjustment/Test).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Remove safety barriers and access platform.

WARNING : MAKE CERTAIN THAT AREA UNDER THE AIRCRAFT IS CLEAR.

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

Printed in England

EXTERNAL LINKAGE SPRING ROD - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Check of main landing gear shortening system external linkage spring rod tension.

2. Check of External Linkage Spring Rod Tension

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Rod - Nose	D925370000
Balancing Device - Pyramid Adapter - LH	D921485000
Balancing Device - Pyramid Adapter - RH	D921485001
Pyramid Adapter - Lifting-LH	D924008000

DESCRIPTION	PART NO.
Pyramid Adapter - Lifting-RH	D924008001
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Access Platform 3.282 m (10 ft. 9 in.)	
Safety Barriers	
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Safety Sleeve - Nose Landing Gear Doors	D925002000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Make certain that visor is not uplocked.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Connect hydraulic ground power unit.

(8) Position safety barriers.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(11) Remove locking caps and open landing gear doors by operating handles located on nose and LH main landing gear legs.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Install safety collars on landing gear door actuating jacks.

C. Check

(1) With landing gear downlocked, measure spring rod stand-out dimension D1.

(2) Remove landing gear and shortening mechanism safety devices.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position then NEUTRAL position as soon as main landing gear telescopic brace strut is unlocked.

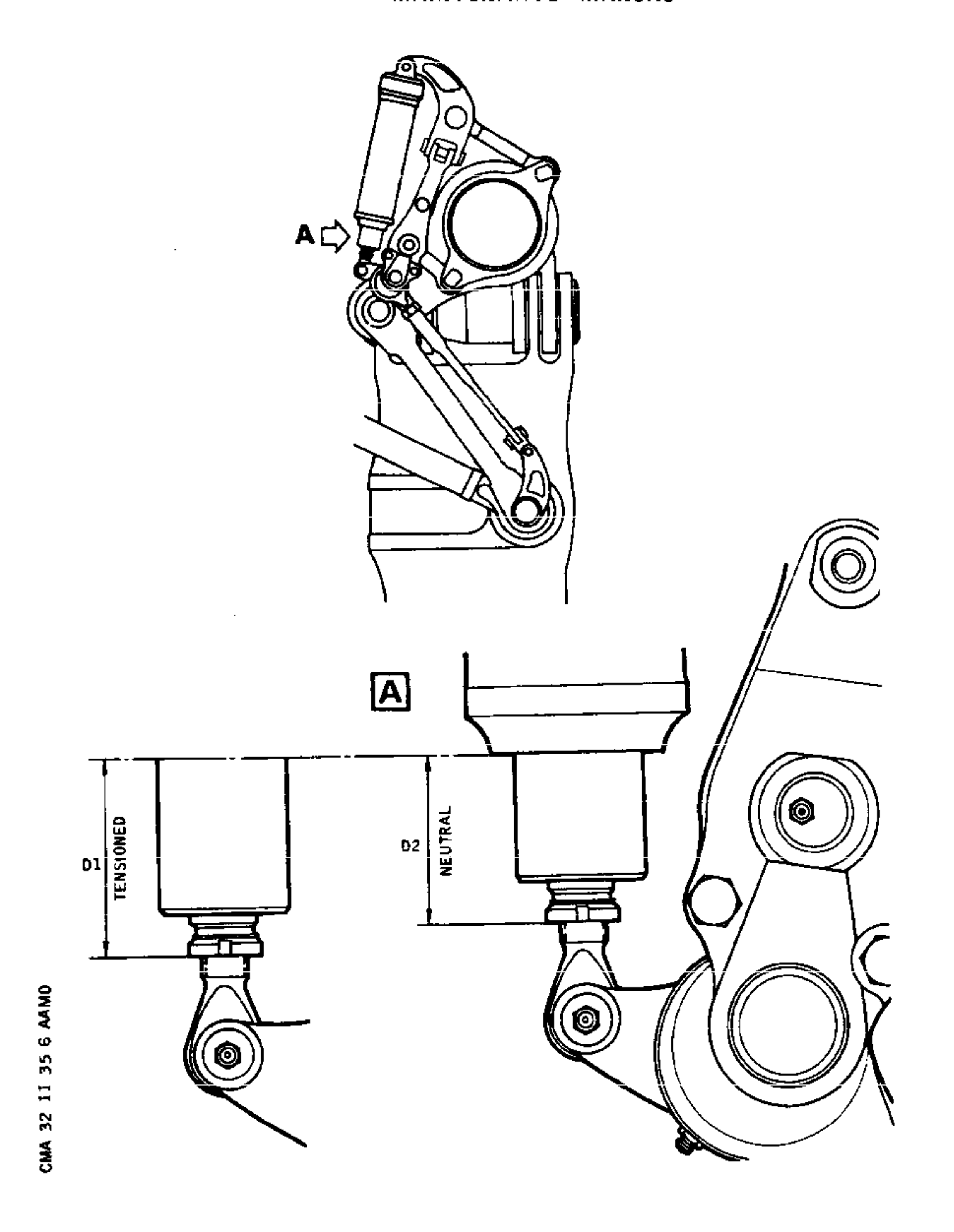
(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Find the position at which the external linkage spring rod moves to and fro freely at its hinge points, (neutral position), by pushing on the bottom of the landing gear.

NOTE : This position is situated at 3° ± 1° from downlocked position of the landing gear.

(7) In this position measure spring rod stand-out dimension D2.
The difference between D1 and D2 shall be 5 ± 2 mm (0.196 ± 0.078 in.).

(8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).



Spring Rod
Figure 601

WARNING : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(10) With gear downlocked, place landing gear Normal control lever in NEUTRAL position.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated. (Gears downlocked).

(13) Install landing gear and shortening mechanism safety devices.

D. Close-Up

(1) Remove safety collars from landing gear door actuating jacks.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(4) Close landing gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Disconnect hydraulic ground power unit.

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(9) Remove safety barriers.

(10) Make certain that the zone under the aircraft is clear.

(11) Remove safety stay.

(12) Lower the aircraft onto its wheels.

Printed in England

ACTUATING ROD AND CYLINDER ROCKER - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The actuating rod and cylinder rocker are removed together, the structure being too close to allow removal of their hinge pin on the aircraft.

2. Cylinder Rocker

A. Equipment and Materials

DESCRIPTION	PART NO.
Extractor	D46066
Guide Assembly	D46067
Wrench - Pin	D46092
Extractor	D46093
Guide Assembly	D46094
Wrench - Pin Socket	174000/78
Wrench - 12-Flat Socket	249400/78

DESCRIPTION	PART NO.
Extractor	249600/78
Guide Assembly	249700/78
Sealants (Ref. 20-30-00, No.051)	
General Lubricants (Ref. 20-30-00, No.352)	
Cleaning (Ref. 20-30-00, No.468)	
Lockwire Dia. 0.80 mm (0.032 in.) Corrosion Resistant Steel	
Circuit Breaker Safety Clips	
Access Platform 3.48 m (11 ft 5 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Depressurize the Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(5) Depressurize the Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(6) Remove main gear actuating cylinder (Ref. 32-31-21, Removal/Installation).

RB C. Remove (Ref. Fig. 401, 402 and 403)

(1) Disconnect actuating rod at its hinge point on the main gear leg.

NOTE: The upper and lower actuating brace truss rods also hinge at this point.

(a) Cut and remove lockwire, remove locking screw (1).

(b) Remove nut (2) using wrench 249400/78.

CAUTION: LEFT HAND THREAD.

(c) Remove pin (6).

(d) Remove both cups (3) and retain sealing rings (4).

(e) Remove sleeve (5) using extractor 249600/78.

(f) Disconnect actuating rod and retain lip seals (8).

(g) Remove lower actuating brace truss rod and retain sealing rings (7) for reinstallation.

CAUTION: NOTE THE POSITION OF SEALING RINGS FOR REINSTALLATION.

(2) Disconnect control rod (39) from metering valve.

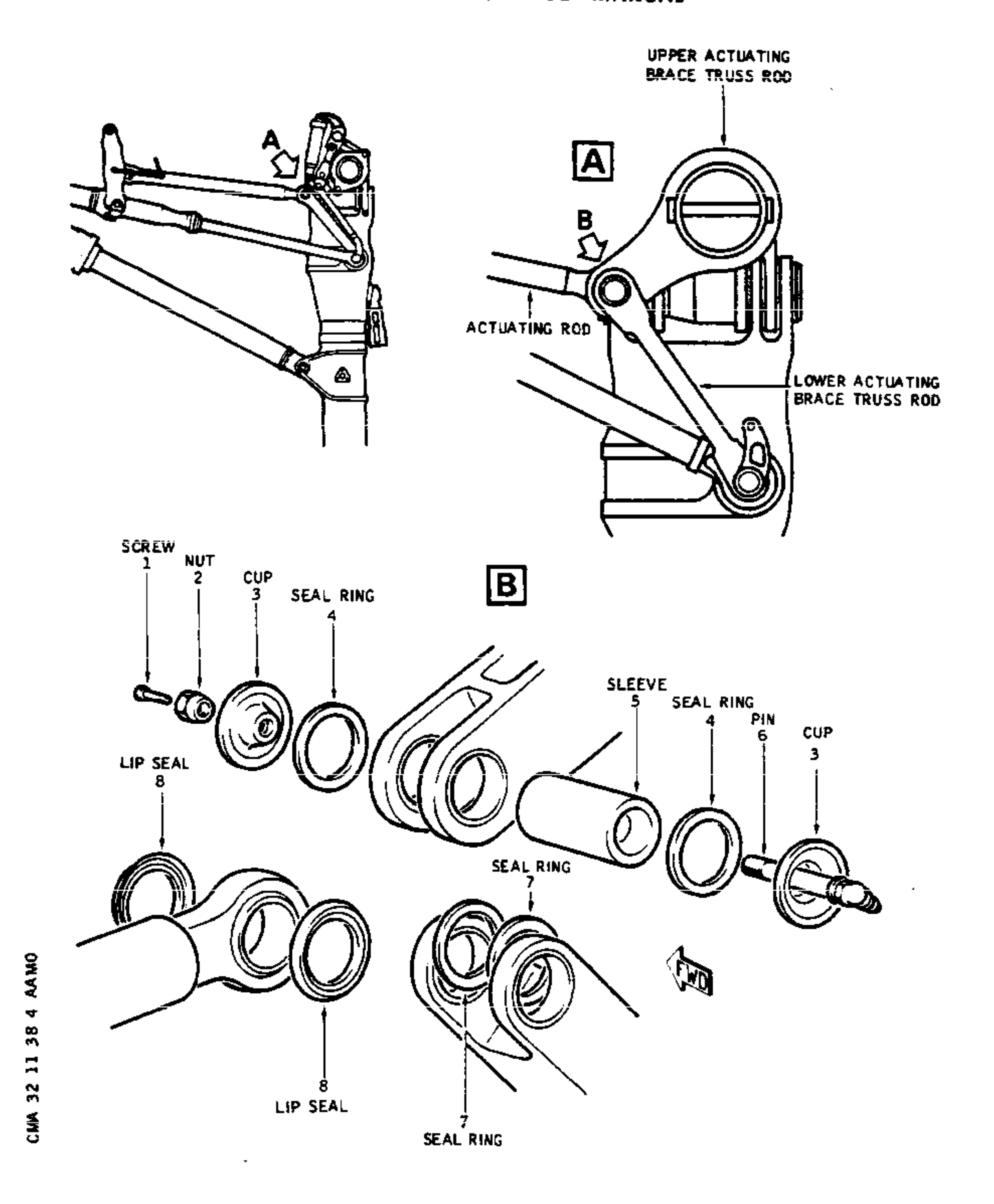
(a) Remove cotter pin and remove nut (37), retain washer (38), disconnect control rod (39) and secure it to aircraft structure.

(3) Disconnect cylinder rocker from aircraft structure.

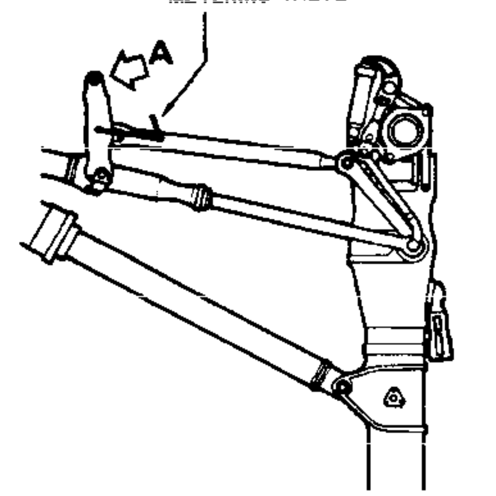
(a) Remove sealing bead from around nut (13) and remove grease nipples and associated locating washers.

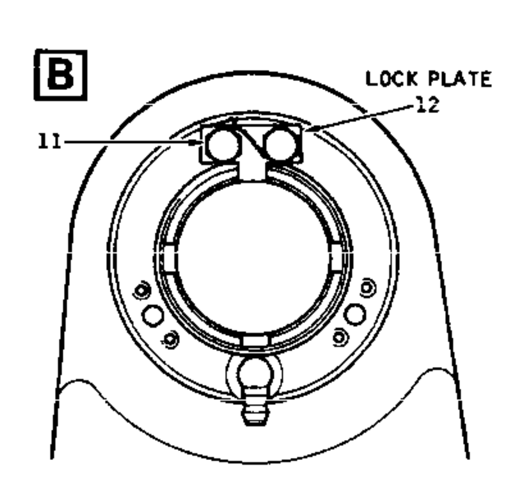
(b) Cut and remove lockwire and remove screws (11). Retain lockplate (12) for reinstallation.

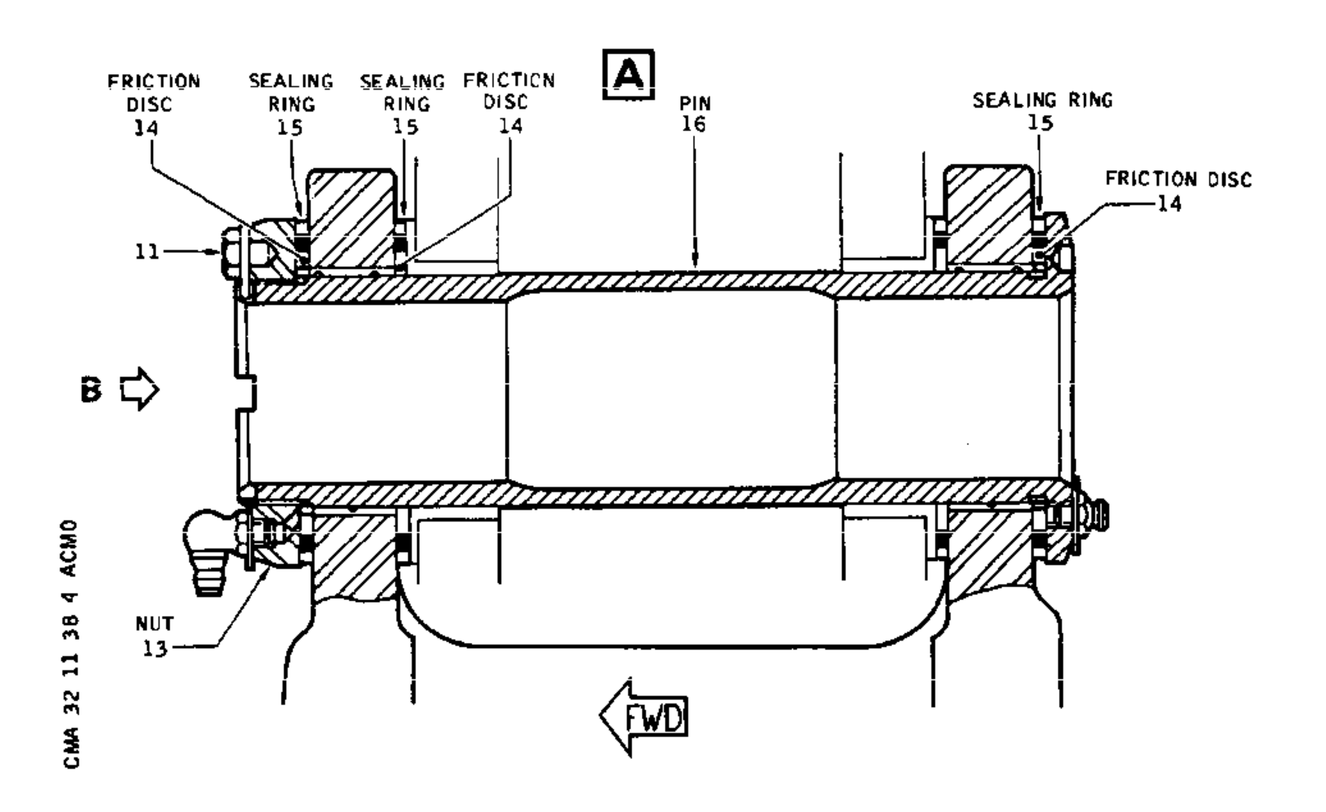
(c) Hold pin (16) by means of socket wrench 174000/78 and remove nut (13) using wrench D46092. Retain friction disc (14) and sealing ring (15) for reinstallation.



R
Actuating Rod - Gear Leg Hinge Point
Figure 401







Cylinder Rocker - Aircraft Structure Hinge Point
R Figure 402

WARNING : THE ACTUATING ROD-CYLINDER ROCKER ASSEMBLY WEIGHS 40 KG (90 lbs).

(d) Withdraw pin (16) using extractor D46093 and remove actuating rod/cylinder rocker assembly. Retain friction disc (14) and sealing ring (15) for reinstallation.

D. Preparation of Replacement Component (Ref. Fig. 403)

(1) Disconnect cylinder rocker from actuating rod on removed unit.

(a) Remove grease nipple together with greasing point identifying washer.

(b) Remove cotter pin, remove nut (35) and retain washer (36) for reinstallation. Remove bolt (41) and withdraw pin (40).

(c) Remove cotter pin, remove nut (27) and retain washer (28) for reinstallation. Remove cup (26).

(d) Extract shaft (20) and sleeve (31) using extractor D46066.
Retain pin (30) and bolt (29) for reinstallation.

(e) Remove cylinder rocker from actuating rod. Retain spacer (23) friction discs (33) and sealing rings (32).

(2) Check seals (21) (22) (25) for correct condition. Replace them if necessary.

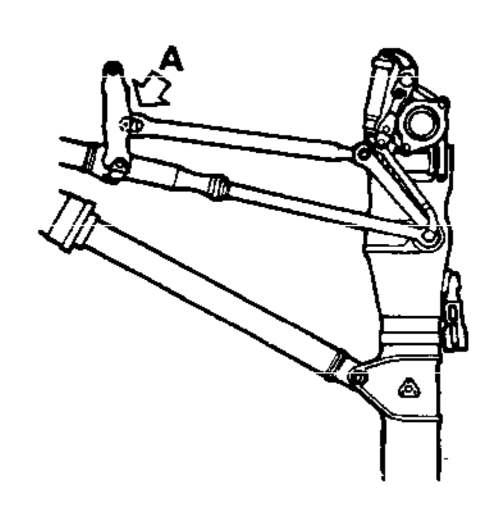
(3) Clean parts due to be installed with Product No.468 and dry with filtered air.

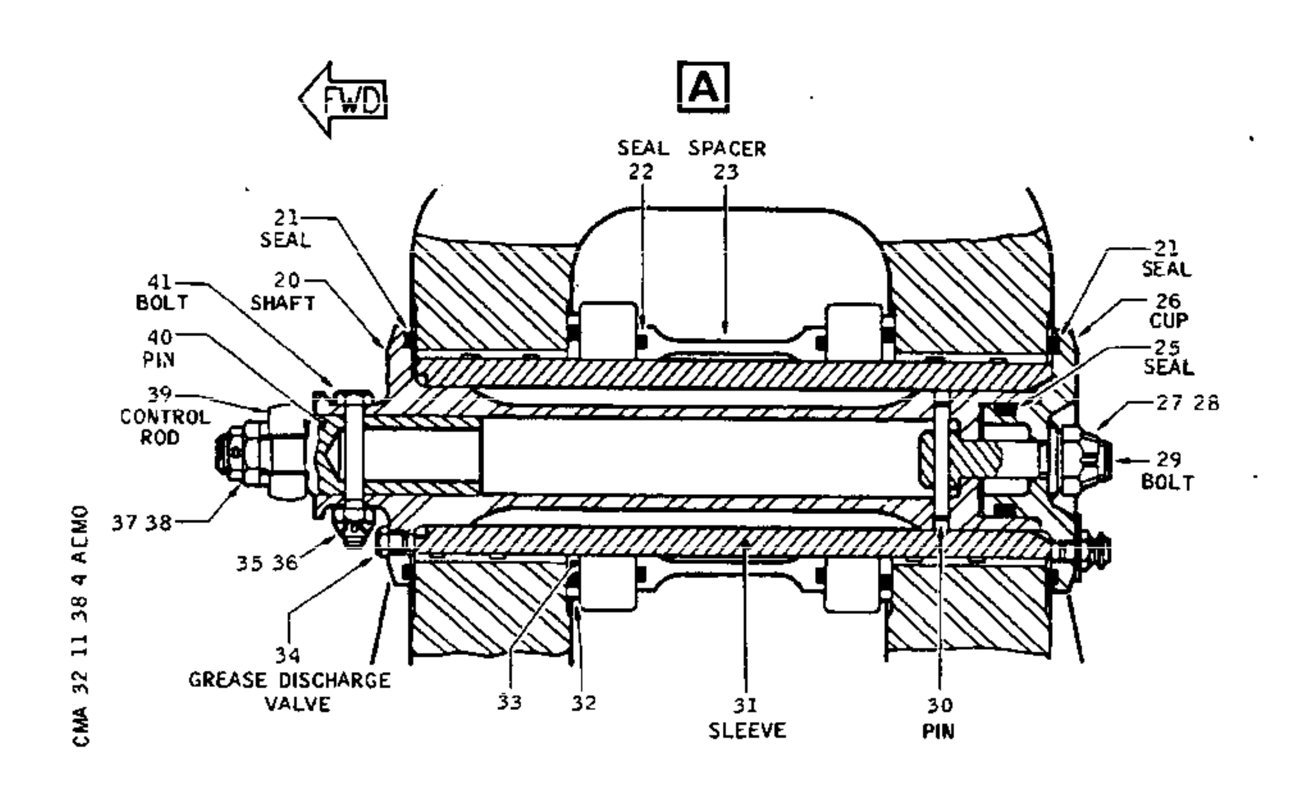
(4) Make certain that parts due to be installed are in good condition, particularly the chromed area of the pins.

(5) Lightly grease cylinder rocker bronze bushes and sleeve (31) with Product No.051.

(6) Connect replacement cylinder rocker to replacement actuating rod.

(a) Make certain that seals (22) are fitted to spacer (23), and install spacer in actuating rod fork end-fitting.





Cylinder Rocker - Actuating Rod Pivot Point
Figure 403

(b) Install actuating rod in cylinder rocker and place a friction disc (33) and sealing ring (32) either side of the actuating rod fork end-fitting. Hold the assembly in position by means of guide D46067.

(c) Make certain that seal (21) is attached to shaft (20).
Install bolt (29), secure with pin (30) and insert assembly into sleeve (31).

(d) Install assembled unit in cylinder rocker with valve (34) at the bottom, using guide D46067.

(e) Make certain that cup (26) is fitted with seal, and install it on the end of shaft (20) with grease nipple at the bottom.

(f) Install washer (28) and nut (27). Torque to between 2 and 3 m.daN (14.751 and 22.126 lbf.ft.). Safety nut with cotter pin.

(g) Install pin (40) in shaft (20) and secure it with bolt (41) washer (36) and nut (35). Torque to between 0.1 and 0.15 m.daN (8.850 and 13.276 lbf.in.). Safety nut (35) with cotter pin.

(h) Install grease nipple together with greasing point identifying washer on cup (26).

E. Install (Ref. Fig. 401, 402 and 403)

(1) Attach cylinder rocker to aircraft structure.

(a) Lubricate pin (16) lightly with Product No.051.

(b) Install friction ring (14) and sealing ring (15) on pin (16) shoulder.

(c) Position cylinder rocker on aircraft fitting with friction ring (14) and sealing ring (15) interposed on either side.
Hold the assembly in position by means of guide D46094.

(d) Insert pin (16) with grease nipple facing downwards.

(e) Remove guide D46094 and install a friction ring (14) and sealing ring (15) on the end of the pin (16).

(f) Tighten nut (13) using wrench 174000/78 and D46092
Torque to 1 m.daN (88.507 lbf.in.).
Back off screw (13) by a number of turns. Then run it down again (hand tight). Back it off one twelfth of a turn to achieve clearance of 0 to 0.12 mm (0 to 0.004 in.).

(g) Install lockplate (12) and secure it with screws (11).
Safety screws with lockwire (Ref. 20-21-13).

(h) Install grease nipples together with greasing point identifying washers (the elbow grease nipple is located on nut (13)).

(2) Connect actuating rod to gear leg

(a) Raise the lower actuating brace truss rod and align bores of the three rods.

(b) Insert sleeve (5) progressively interposing sealing rings (7) between upper and lower actuating brace truss rods and lip seals (8) between actuating rod and upper actuating brace truss rod. Tool 249700/78.

(c) Install seal rings (4).

(d) Position cups (3) and insert pin (6) with head facing rear of aircraft.

(e) Tighten nut (2) using wrench 249400/78.

CAUTION : LEFT-HAND THREAD.

Torque to between 1.5 and 2 m.daN (11.063 and 14.751 lbf.ft.).

(f) Tighten screw (1) and safety with lockwire (Ref. 20-21-13).

(3) Connect metering valve control rod.

(a) Install control rod (39) washer (38) nut (37). Tighten nut and safety with cotter pin.

(4) Install main landing gear actuating cylinder (Ref. 32-31-21 Removal/Installation).

F. Test

Not applicable

G. Close-Up

(1) Remove safety clips and tags and reset circuit breakers

(2) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(3) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(4) Remove access platform and close access doors.

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MAIN GEAR DOORS - DESCRIPTION AND OPERATION

1. General

Each main gear includes two doors.

A. Main Door

This door is connected to the fuselage structure by three hinges. It closes off those sections of the landing gear well located in the fuselage. It is opened and closed by a hydraulic jack during landing gear extension or retraction. It is electro-hydraulically actuated.

(1) The main gear door is fitted with:

(a) A fork fitting connected to the hydraulic actuating jack. This fitting is located on the door centre section.

(b) A locking roller, fitted to the front section uplocks the door. In this position, the roller is held mechanically by the uplock secured to the structure.
Hook uplock release is achieved hydraulically to allow door opening.

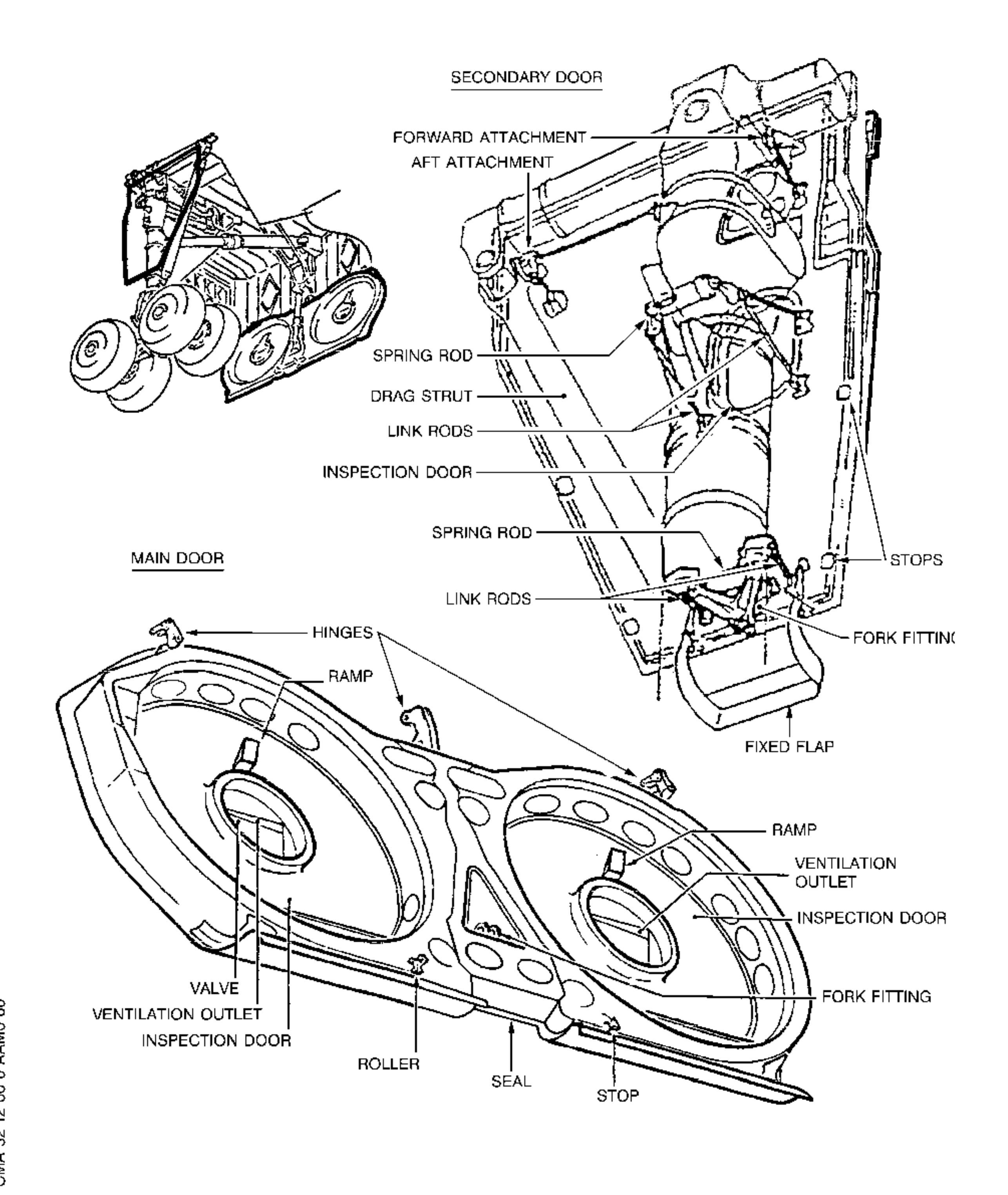
(c) Two inspection doors providing access to the landing gear wells when the doors are uplocked. The front inspection door includes a valve providing ventilation of the gear well under the effect of negative pressure. Each door includes a ventilation outlet.

(d) Two ramps enabling the doors to be opened in Ultimate Emergency under the action of the gear outer wheels.

R
R
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R
R
R

R (e) A stop located at door gear section which comes against the structural stop when door is uplocked.

R



Main Landing Gear Doors
Figure 001

R

R
R

B. Secondary Door

The secondary door is mounted on the landing gear leg and operates with it.

(1) It is attached at its upper end by two fittings ensuring longitudinal articulation.

(a) A forward fitting makes the door integral with the shortening jack mounting, by a rod and a bracing strut.

(b) A rear fitting composed of three rods, picks up a hinged fitting installed on the bracing strut upper attachment pin.

(2) The door centre section includes a pair of hinge fittings at the front and a single hinge fitting at the rear. Each hinge fitting is connected to a rod linked to a spring rod by means of compensation cranks hinged at the landing gear leg.

The door lower section includes a hinge fitting at the front and a hinge fitting at the rear. Each hinge fitting is connected to a rod linked to a spring rod by means of compensation cranks hinged at the landing gear leg.

A fork fitting mounted between the landing gear leg and the secondary door serves for lateral adjustment of the door.

The link rods and spring rods serve to hold the secondary door firmly against the structural stops when the landing gear is in uplocked position.

R (3) In the gear up position, the fixed flap ensure the door profile with
R main door.

MAIN DOORS - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main door is hinged on the fuselage at three hinge points. A fork fitting at main door centre section serves for connection of the hydraulic actuating jack.
Main door forward section is fitted with the uplock roller, the aft section with a mechanical stop.

2. Main Door

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
Access Platform 3.282 m (10 ft. 9 in.)	
Bullet - Installation Internal Pin	D921608002
Bullet - Installation External Pin	D921608001

DESCRIPTION	PART NO.
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	

**ON A/C ALL

Common Grease (Ref. 20-30-00, No.051)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Measure and note dimensions "A" and "B" (Ref. Fig. 401)

(a) Dimension "A" : distance by which roller protrudes from hook lower jaw

(b) Dimension "B": between the door stop and the structure stop

NOTE : The dimensions noted above shall be respected upon installation of removed items.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) Remove locking cap and open gear doors by operating handle located on LH main landing gear leg.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP.	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(12) Display a warning notice in the flight compartment.

(13) Install safety collars.

C. Remove

(1) Disconnect bonding strips

(2) On door actuating jack hinge

(a) Remove cotter pin and unscrew nut (11).

(b) Remove pin (7) and washers (10) and (8).

(c) Retain bush (9) for reinstallation.

(3) On centre hinge

(a) Remove cotter pin and unscrew nut (3).

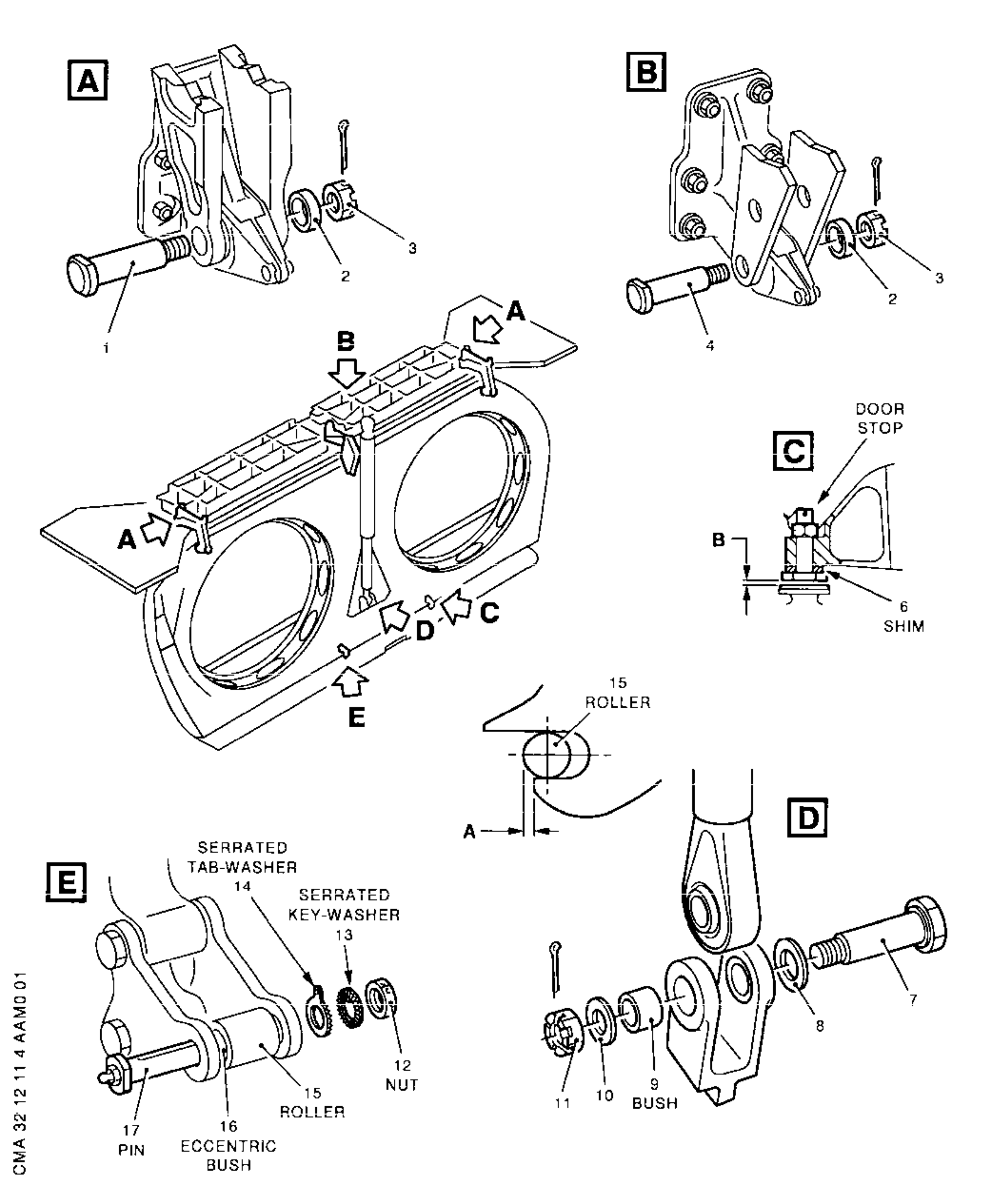
(b) Remove pin (4).

(c) Retain washer (2) for reinstallation.

CAUTION : DOOR WEIGHS 72 Kgs (158 lb).

(4) On outer hinges

(a) Remove cotter pins and unscrew nuts (3).



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Main Door
Figure 401

(b) Remove pins (1).

(c) Retain washers (2) for reinstallation.

(5) Remove door

D. Preparation of Replacement Component

Check that hinge bores on door are perfectly clean. Clean and grease if necessary.

E. Install

(1) Check condition of spherical bearings. If necessary, remove bushes noting their positions, clean and grease them.

(2) Install bushes in their relevant positions.

(3) Position door and align the three hinges.

(4) On outer hinges

(a) Install tool D921608001 on pins (1).

(b) Grease pins (1).

(c) Install pins (1) with heads facing forwards.

(5) On centre hinge

(a) Install tool D921608002 on pin (4).

(b) Grease pin (4).

(c) Install pin (4) with head facing forwards.

(6) Remove tools D921608001 and D921608002.

(7) Install washers (2) and tighten nuts (3).

(8) Torque nuts (3) to 2 m.daN (14.75 lbf.ft.) and safety with cotter pins.

(9) On door/actuating jack hinge.

(a) Install bush (9).

(b) Grease pin (7).

(c) Insert pin (7) with washer (8).

(d) Install washer (10).

(e) Torque nut (11) to 1 m.daN (88 lbf.in.).

(f) Safety nut (11) with cotter pin.

(10) Connect bonding strips.

WARNING : MAKE CERTAIN THAT REPLACEMENT DOOR UPLOCK HOOK IS IN RELEASED POSITION.

(11) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(12) Remove safety collars.

(13) Remove safety clips and tags and reset circuit breakers

(14) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : CHECK THAT DOOR TRAVEL RANGES ARE CLEAR.

(16) Close gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(20) Check the clearances between door and fuselage.

(a) At front and rear of door:
5 +3, -1 mm (0.196 +0.118, -0.039 in).

(b) On hinge side: 10 mm (0.393 in).

(21) Check that doors are flush with fuselage skin.

(a) Forward ± 1.5 mm (±0.059 in).

(b) Rearward ± 1.5 mm (±0.059 in).

(22) Check dimension "A" (distance by which roller (15) protrudes from hook lower jaw) and if necessary adjust eccentric bush (16) to obtain dimension "A" noted prior to removal.

R (a) Cut and remove lockwire, remove nut (12).
R Remove serrated key-washer (13) and serrated
R tab-washer (14).

(b) Turn pin (17) as required.

R (c) Install serrated tab-washer (14) on to pin (17)
R flat surface against shackle body.

R (d) Locate serrated key-washer (13) into key way on
R pin (17) rotate serrated tab-washer (14) into
R required position for wirelocking and mesh
R serrated key-washer (13) and serrated tab
R washer (14) together ensuring that the serrations
R interlock.

R (e) Secure with nut (12). Torque tighten nut (12)
R to 106.16 lbf in (1.2 mdaN).

R (f) Lockwire nut (12) to serrated tab-washer (14).

(23) Check dimension "B" between door stop and structure.

(a) If necessary adjust shim (6).

(24) Remove safety clips and tags and reset circuit breakers.

F. Test

(1) Adjust door flap in landing gear uplocked position
R (Ref. Adjustment/Test).

G. Close-Up

(1) Remove access platform.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove warning notice from flight compartment.

MAIN DOORS - ADJUSTMENT/TEST

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE: DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED: DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT THE LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

R A. Adjustment of main door seal after replacement of main or secondary door.

R 2. Adjust Main Door Seal

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, Lifting Capability greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001

DESCRIPTION	PART NO.
Safety Stay	-
Electrical Ground Power Unit	-
Ground Power Unit-Hydraulic-Power and Preliminary Testing	EMH398E
Access Platform 3.282 m (10 ft 9 in)	-
Safety Barriers	-
R Special Materials (Ref. 20-30-00, No.A231)	-
R Sealants (Ref. 20-30-00, No.352)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Position safety barriers.

(6) Make certain that visor is not uplocked.

(7) Make certain that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH UC WEIGHT SW 'B' SYS SUP	3-213	G294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(8) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(9) Connect hydraulic ground power unit to Green hydraulic system.

R C. Adjustment (Ref. Fig.501)

R (1) Remove nuts (1), washers (2) and bolts (3).

R (2) Remove plates (4) and seal assy (5).

R

R

R (3) Remove landing gear and shortening mechanism safety devices.

R (4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR AND LANDING GEAR TRAVEL RANGES ARE CLEAR.

R (5) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

R (6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

R (7) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (8) Check clearance between FWD secondary door fixed flap and main door.
R Clearance is: 8 mm ±1 mm (0.316 in ±0.039 in).

R (9) Record clearance between LH and RH side of secondary door fixed flap
R and main door.

R (10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (11) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

R (12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position when gear is downlocked.

R (13) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (14) Install landing gear and shortening mechanism safety devices.

A

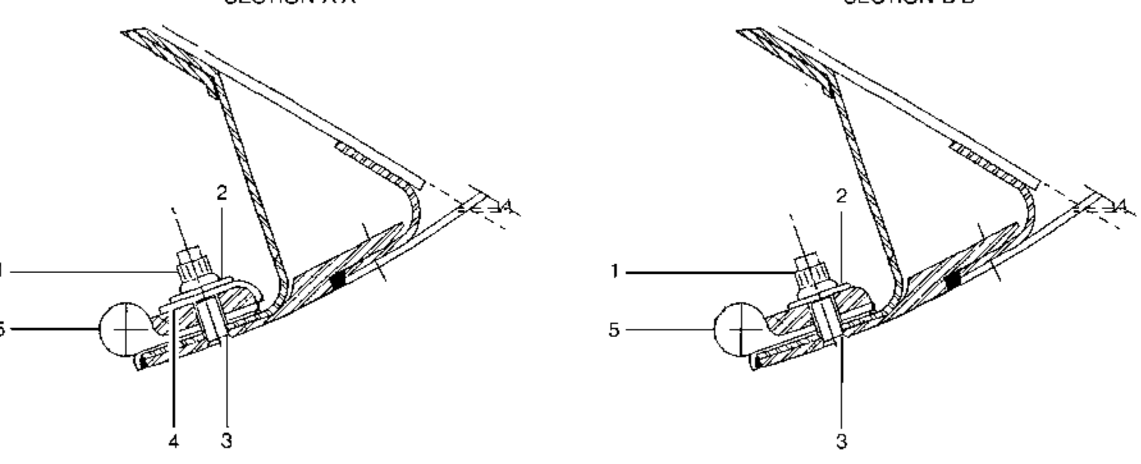
A

4 A B 4

B 5 B

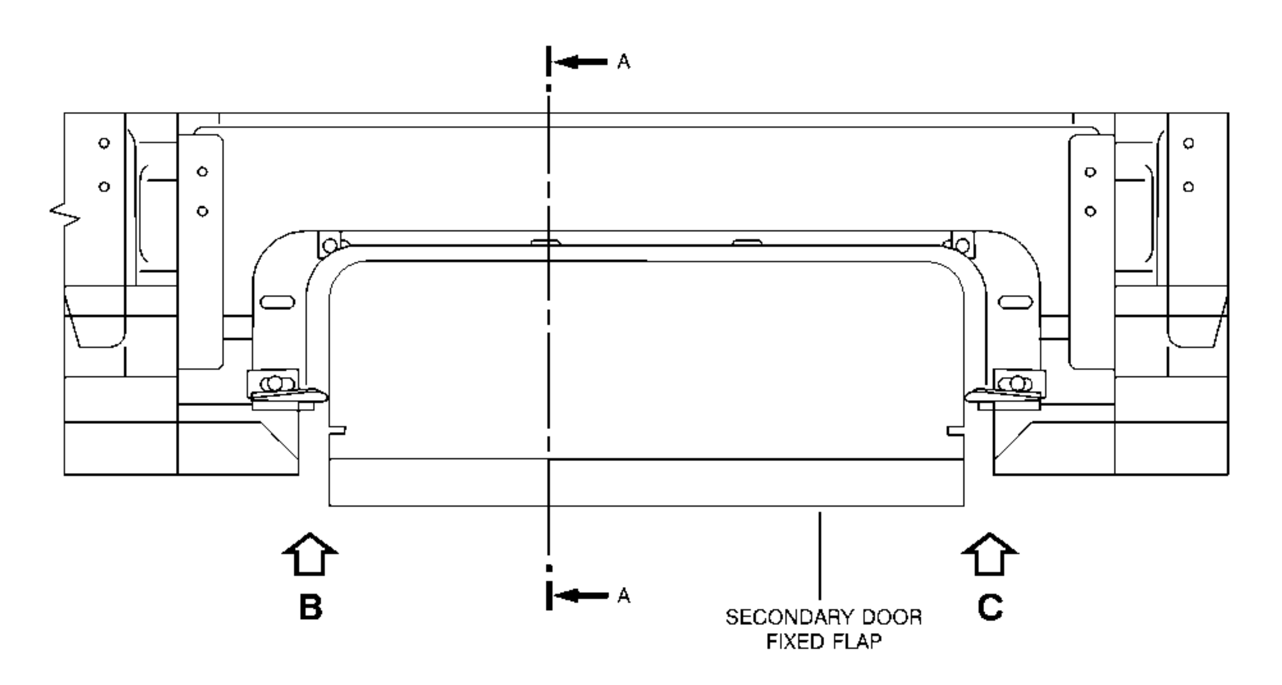
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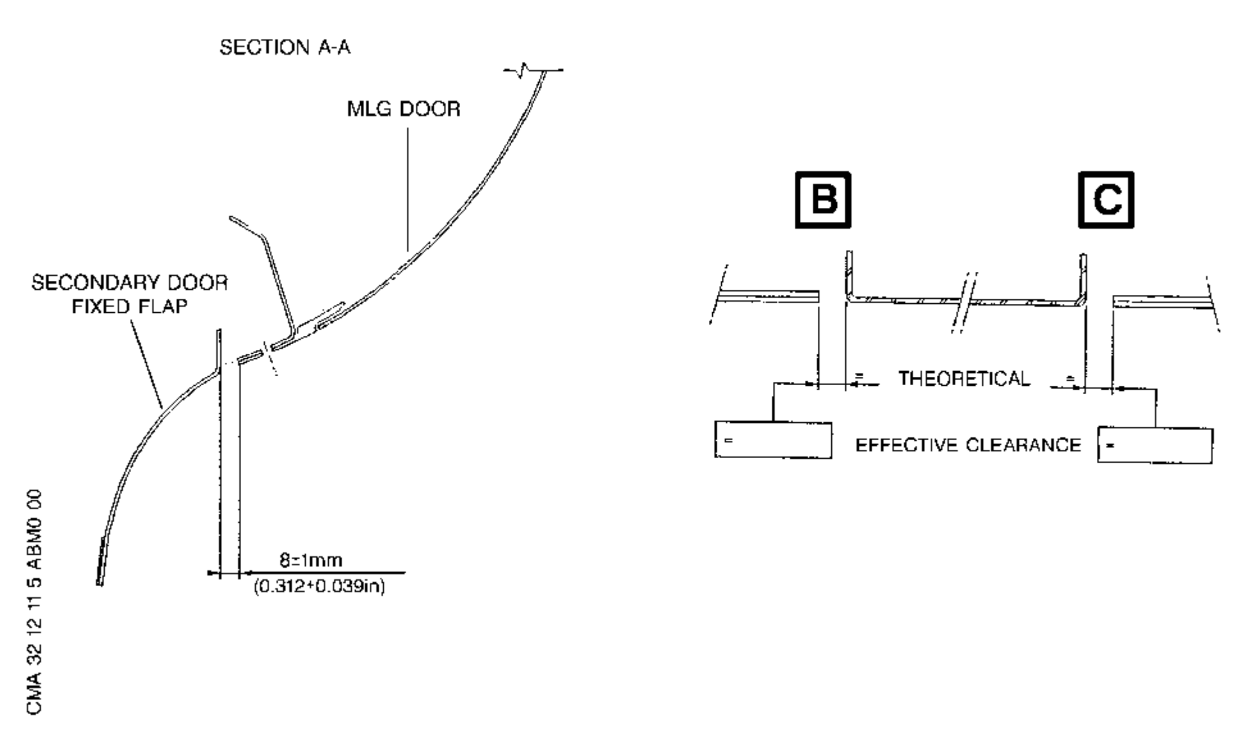
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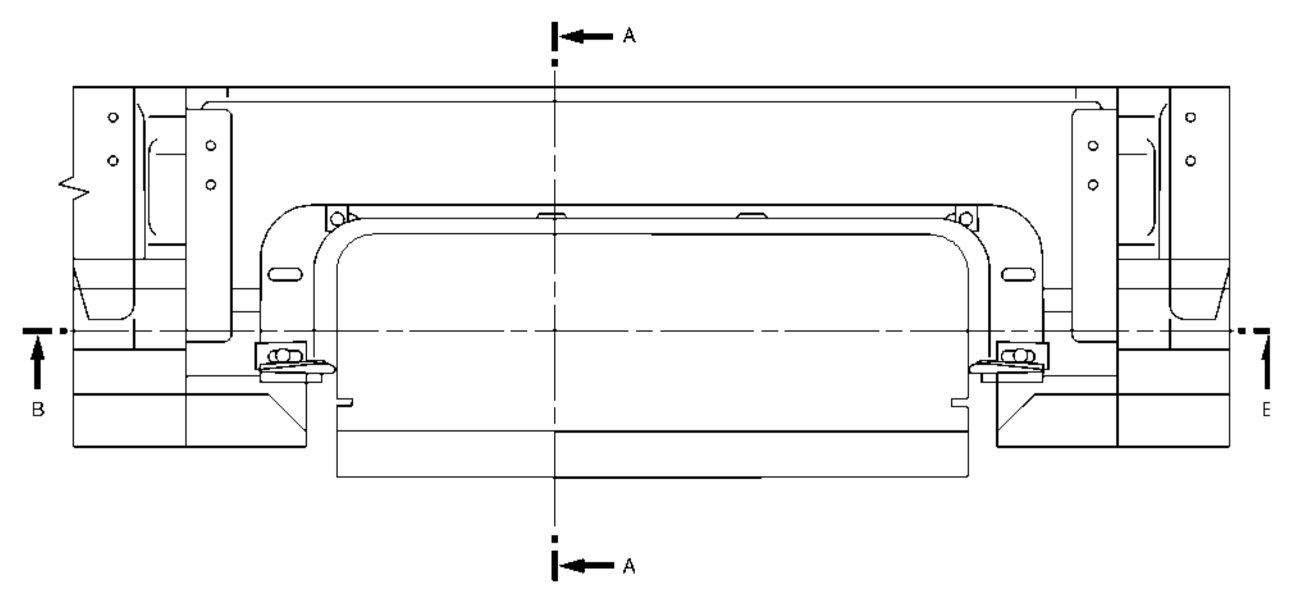
R Main Door Seal - Adjustment
Figure 501 (Sheet 1 of 3)

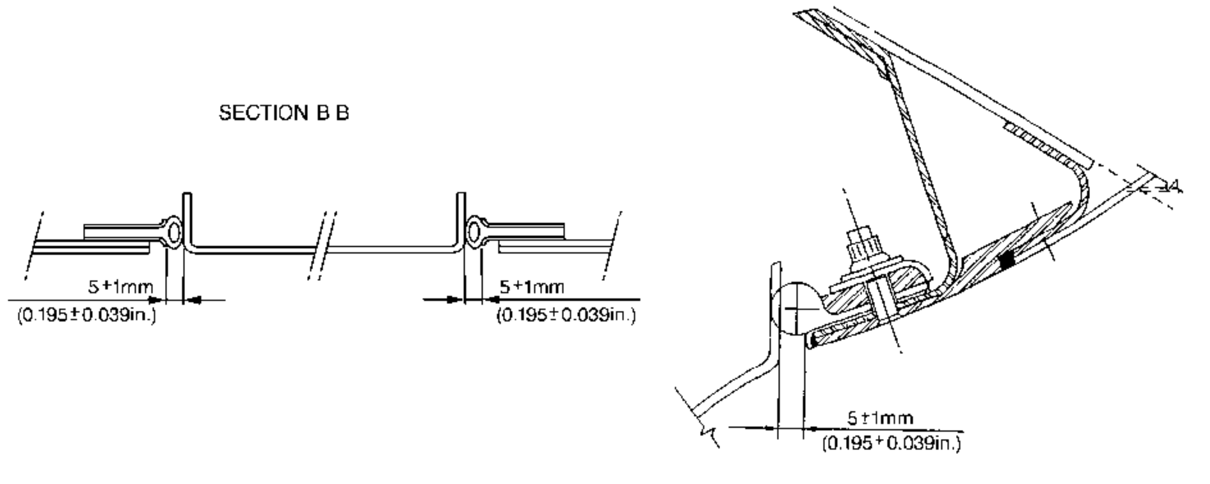




Main Door Seal - Adjustment
Figure 501 (Sheet 2 of 3)

R





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Main Door Seal - Adjustment
Figure 501 (Sheet 3 of 3)

R

R (15) According to clearance noted in para. (9), put seal assy (5) in
R position.

R NOTE: Install seal assy (5) with interfay of material No.A231.

R (16) Install plates (4), bolts (3), washers (2) and nuts (1).

R (17) Manually tighten nuts (1) to allow final adjustment.

R (18) Remove landing gear and shortening mechanism safety devices.

R WARNING: MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

R (19) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (20) On First Officer's instrument panel, place landing gear Normal control
R lever in UP position.

R (21) On First Officer's instrument panel, place landing gear Normal control
R lever in NEUTRAL position.

R (22) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (23) Put seal assy (5) in final position: RH, LH and FWD position are 5 mm
R ±1 mm (0.195 in ±0.039 in) (Ref. Fig.501 (Sheet 3 of 3, Section B-B).

R (24) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (25) On First Officer's instrument panel, place landing gear Normal control
R lever in DOWN position.

R (26) On First Officer's instrument panel, place landing gear Normal control
R lever in NEUTRAL position when gear is downlocked.

R (27) Shut down and depressurize Green hydraulic system (Ref. 29-11-00,
R Servicing).

R (28) On First Officer's instrument panel, make certain that the four green
R arrows on gears position indicating unit are illuminated (gears
R downlocked).

R (29) Install landing gear and shortening mechanism safety devices.

R (30) Tighten nuts (1). Torque to between 0.30 and 0.35 mdaN (26.6 and
R 31 lbf in).

R NOTE: Fill cavity between seal assy and main door with material
R No.A231.

D. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Remove safety barriers, check that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

SECONDARY DOORS - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The secondary door is attached, at its upper, centre and lower sections, to the main landing gear leg and operates in conjunction with it via rods, cranks and fork hinge fittings.

2. Secondary Door

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183 621 lbf)	07-10-0001
Safety Jack Adapter	D920113000
Jacking Pad-Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000

DESCRIPTION	PART NO.
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	-
Ground Power Unit - Hydraulic-Power and preliminary Testing	EMH398E
Electrical Ground Power Unit	-
Safety Collars - Main Landing Gear Door Actuating Cylinder	D921317000
Safety Sleeve - Nose Landing Gear Doors	E925002000
RB Gauge	PM81876
Lockwire Dia. 0.8 mm (0.032 in) (Corrosion Resistant Steel)	-
Safety Barriers	-
Access Platform 3.220 m (10 ft 7 in)	-
Circuit Breaker Safety Clips	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Install safety stay.

(5) Position safety barriers.

(6) Check that visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(8) Connect hydraulic ground power unit to Green hydraulic system.

(9) Remove landing gear and shortening mechanism safety

devices.

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).
Adjust hydraulic power delivery to allow a slow landing gear retraction.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(11) On First Officer's instrument panel, place landing gear Normal control lever in UP position then back to NEUTRAL as soon as the landing gear has retracted approximately 10 degrees.

(12) Position main landing gear to facilitate removal of secondary door and maintain in this position.

(13) Remove locking caps and place main and nose gear door operating handles in open position (indicator plates showing red).

(14) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(16) Display a warning notice in flight compartment.

(17) Install safety collars.

(18) Not applicable.

(20) Remove access door 572AT or 672AT according to the landing gear involved.

(21) Disconnect bonding strips.

C. Remove
(Ref. Fig.401 and 402)

(Ref. Fig.403 and 404)

(1) Door upper section (Ref. Fig. 401)

Remove screws (3), remove angle fittings (1) and (2) at top of door.

(2) Lower attach fittings (Ref. Fig. 403)

(a) Uncouple the two tension adjusters (55) from their fittings on the door.

- Remove nuts (62)
- Remove bolts (59)
- Remove bushes (60) and (61)

(b) Uncouple torque link (69) from its fittings on door.

- Remove nuts (64) and (65)
- Remove bolts (58) and (67)
- Remove bushes (57) and (63), (68) and (66)

(3) Centre attach fittings (Ref. Fig. 404)

(a) Uncouple rods (73) and (75) from their fittings on door.

- Remove nuts (79)
- Remove bolts (78)
- Remove bushes (77) and (80)

(b) Uncouple rod (76)

- Remove nut (83)
- Remove bolt (82)
- Remove bushes (81) and (84)

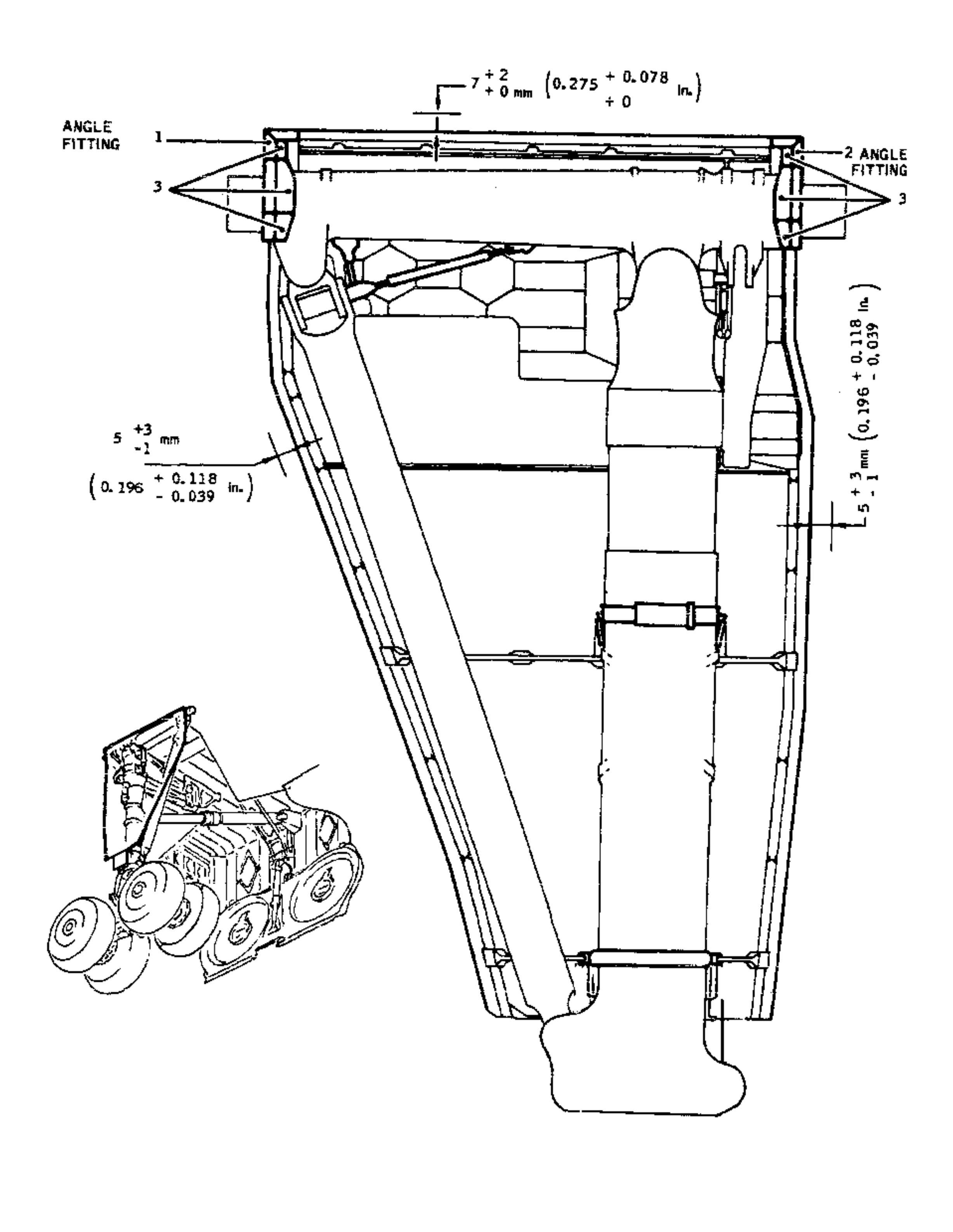
(4) Support secondary door to uncouple upper attach fittings.

(5) Forward upper attach fittings (Ref. Fig. 402)

(a) Uncouple strut (32) from its fitting on the door

- Remove nut (36)
- Remove bolt (35)
- Remove bushes (34) and (33)

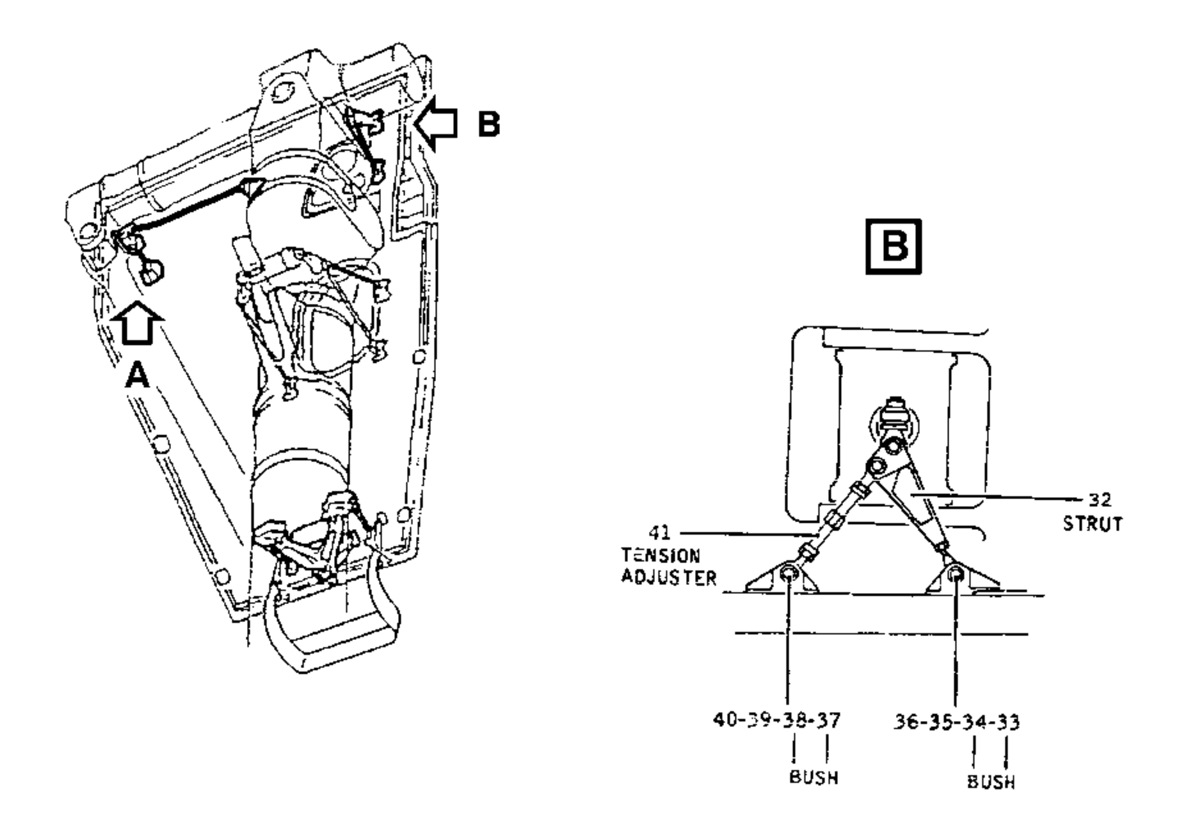
(b) Uncouple tension adjuster (41) from its fitting on the door.

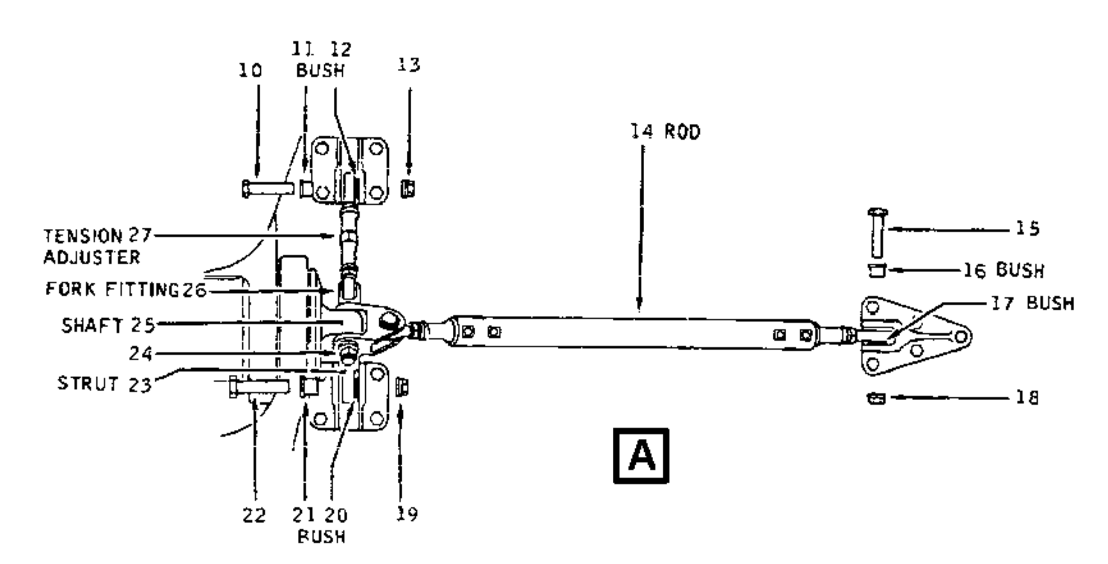


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Secondary Door
Figure 401

R

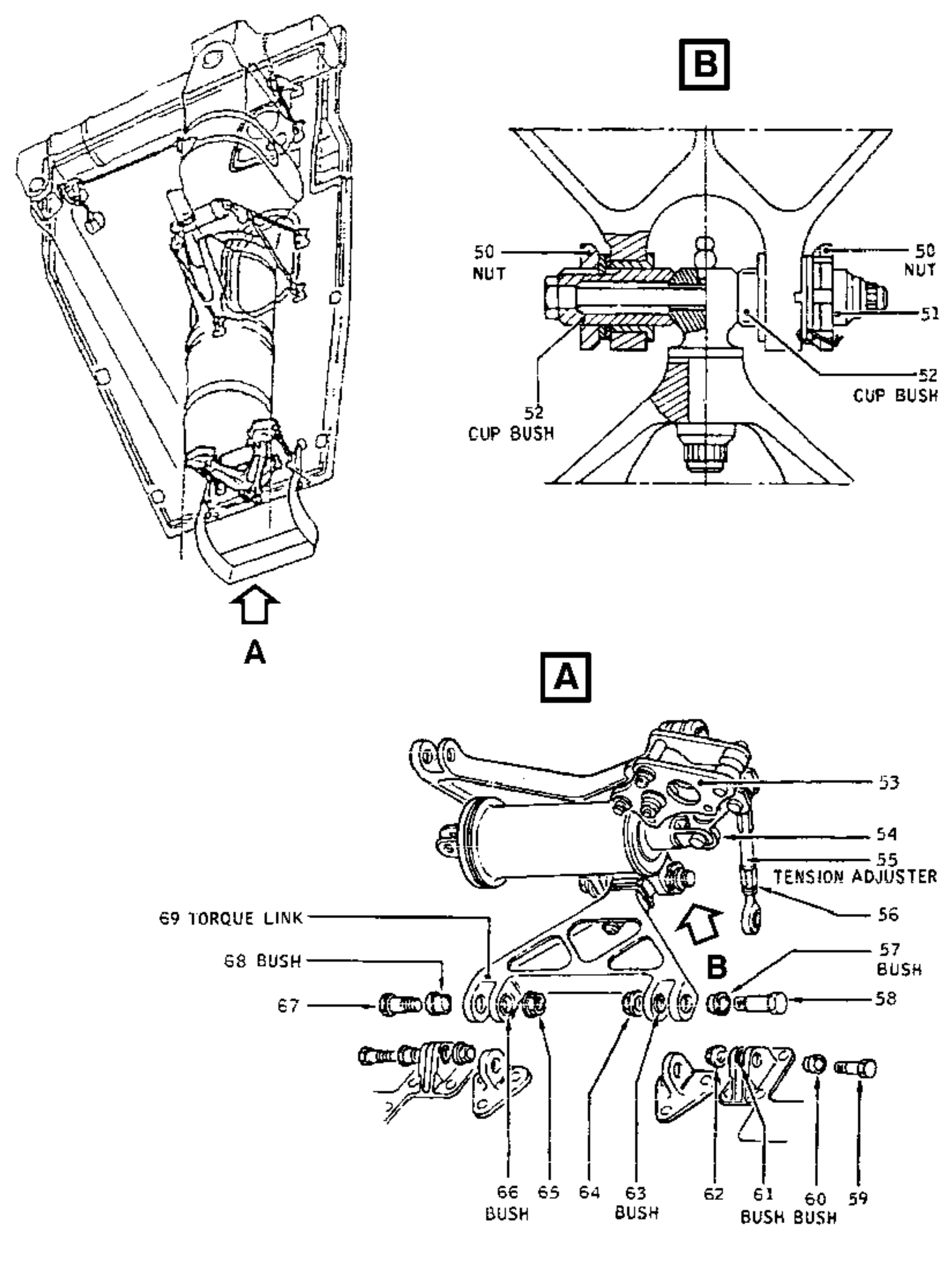




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Upper Attach Fittings
Figure 402

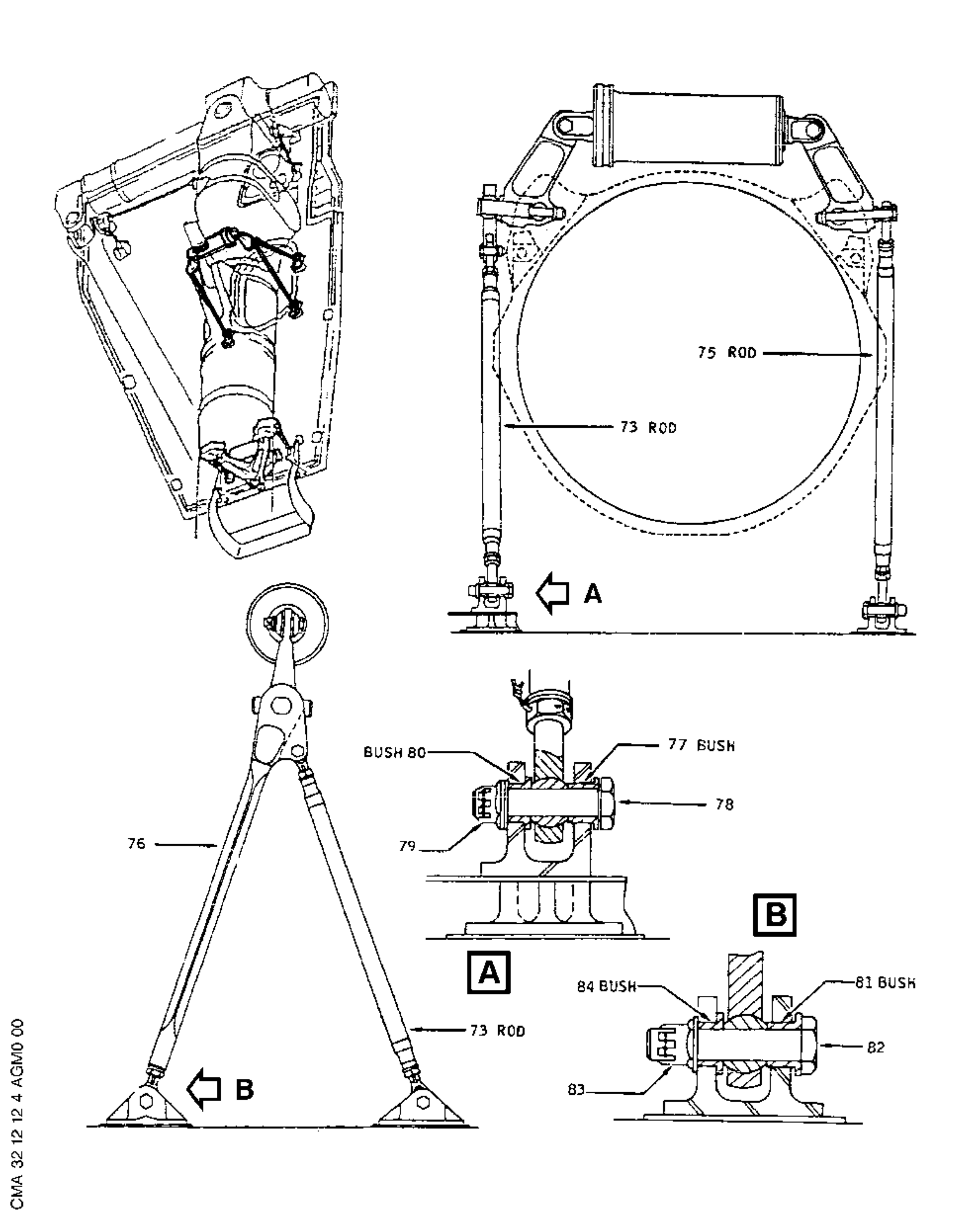
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Lower Attach Fittings
Figure 403

R



Centre Attach Fittings
Figure 404

R

- Remove nut (40)
- Remove bolt (39)
- Remove bushes (38) and (37).

(6) Rear upper attach fittings (Ref. Fig. 402)

(a) Uncouple rod (14) from its fitting on door.

- Remove nut (18)
- Remove bolt (15)
- Remove bushes (16) and (17).

(b) Uncouple tension adjuster (27) from its fitting on door.

- Cut and remove lockwire and remove nut (24)
- Remove nut (13)
- Remove bolt (10)
- Remove bushes (11) and (12).

(c) Uncouple strut (23) from its fitting on the door.

- Remove nut (19)
- Remove bolt (22)
- Remove bushes (21) and (20).

(7) Remove secondary door.

D. Preparation of Replacement Component

Not applicable.

E. Install (Ref. Fig. 401, 402 and 405)

RB NOTE: When positioning the door, check the door location within the aperture using gauge Part No. PM81876 before tightening all adjuster points. This will prevent the upper door edge fouling the lower wing skin.

RB The gauge is to be used as a Go, No-Go gauge, the gap between the door and the lower wing skin has to be greater than one inch (25.4 mm) and parallel front to rear (Ref. Fig. 405)

(1) Remove angle fittings (1) and (2) and access panel 732 AB or 742 AB and position replacement secondary door.

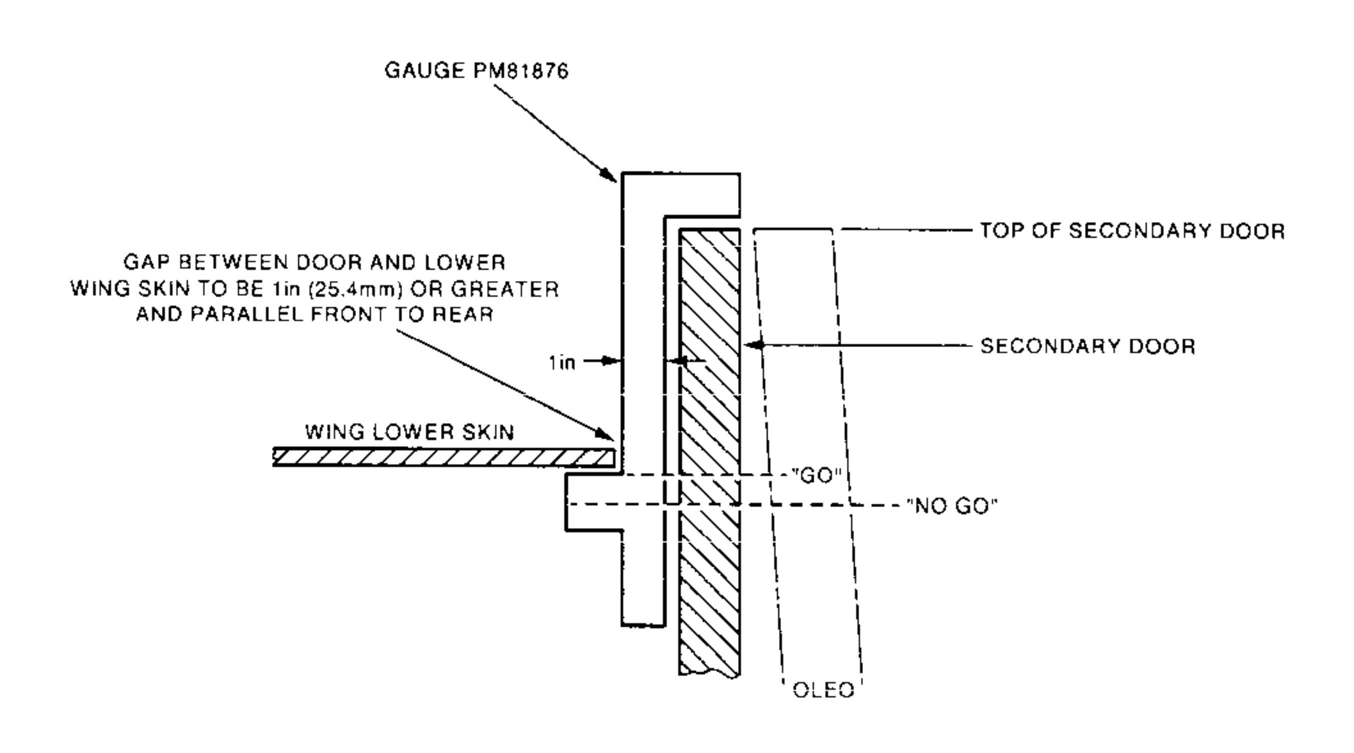
(a) Forward upper attach fittings (Ref. Fig. 402)

- Fit bushes (33) and (34)
- Insert bolt (35)
- Install nut (36).

(b) Couple tension adjuster (41) to its fitting on door.

- Fit bushes (37) and (380
- Insert bolt (39)
- Install nut (40).

NOTE: Check that clearance between secondary door and brace truss on crossbeam is minimum (without fouling).
If clearance is too great, adjust length of tension adjuster (41).



CMB 32 12 12 4 AJM0 00

RB Gauge PM81876
RB Figure 405

(3) Rear upper attach fittings (Ref. Fig. 402)

B B B B NOTE: Check that crossbeam/drag strut attachment shaft (25) rotates freely. If necessary back off nut with wrench 252200-78 (HZAW 1764) while holding pin with wrench 252300-78 (HZAW 1765).

(a) Check that fork fitting (26) is free to rotate.

(b) Couple strut (23).

- Install bushes (20) and (21)
- Insert bolt (22)
- install nut (19).

(c) Couple tension adjuster (27).

- Install bushes (11) and (12)
- Insert bolt (10)
- Install nut (13).

(d) Install nut (24).

(e) Tighten shaft (25) if it has been previously loosened.

RB RB B - Torque shaft to between 1 and 3 mdaN (88.5 to 265.5 lbf in) using Facon S.203 torque wrench (HZAW 1872).

(f) Couple rod (14).

- Install bushes (16) and (17)
- Insert bolt (15)
- Install nut (18).

(4) Centre attach fittings (Ref. Fig. 404)

(a) Couple rods (73) and (75).

- Install bushes (77) and (80)
- Insert bushes (78)
- Install nuts (79).

(b) Couple rod (76)

- Install bushes (81) and (84)
- Insert bolt (82)
- Install nut (83)

(c) Adjust length of rods to achieve the following theoretical dimensions :

Item 73 end fitting centre-to-centre length : 337 mm (13.267 in.).
Item 75 end fitting centre-to-centre length : 378 mm (14.881 in.).
Item 76 end fitting centre-to-centre length : 379.2 mm (14.923 in.).

(d) Check that the minimum clearance between the lower surface of access panel 732AB or 742AB and the shortening lock is 1 mm (0.039 in.).

(d1) If necessary finally adjust rods (73), (75), (76).

(d2) Fully tighten lock-nuts.

(5) Lower attach fittings (Ref. Fig. 403)

(a) Cut lockwire and loosen lock-nuts (56). Adjust length of tension adjusters (55) in order to couple them to their attach fittings on door.

- Install bushes (60) and (61)
- Insert bolts (59)
- Install nuts (62)

(b) Make certain that length of tension adjusters (55) is between 142 mm and 144 mm (5.58 in. and 5.66 in.).

(c) Fully tighten and wirelock lock-nuts (56).

(6) Check that no item of equipment on landing gear fouls secondary door.

(7) Not applicable.

(8) Remove safety clips and tags and reset circuit breakers.

(9) Energize the aircraft electrical network.

WARNING : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(12) Retract landing gear slowly by adjusting hydraulic ground power unit delivery.

WARNING : DURING LANDING GEAR RETRACTION, MAKE CERTAIN:

- SECONDARY DOOR FITS INTO ITS STRUCTURAL HOUSING.
- SECONDARY DOOR DOES NOT FOUL FRONT CRANK DURING ITS ROTATION.
- UPPER EDGE OF DOOR DOES NOT FOUL RIB21.

(13) With landing gear in up position, check locking.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Check clearance between panel and structure. If necessary, improve adjustment in order to remain within tolerances.

NOTE : One or more landing gear manoeuvres may be required to perfect adjustment of these clearances.

(a) To achieve clearance between door and RIB21, adjust, if necessary, tension adjusters (27) and (41) and adjustable strut (32). Clearance at RIB21 : 7 mm + 0,+2 mm (0.275 in. + 0,+0.078 in.).

(b) To achieve lateral clearance of door, adjust, if necessary, rod (14). Lateral clearances : 5 mm + 3,-1 mm (0.196 in. + 0.118,- 0.039 in.).

(c) Tighten and wirelock lock-nuts on tension adjusters (27) and (41) on rod (14) and strut (32).

(17) Couple fork fitting (69)

(a) Install bushes (57) (63) (66) and (68).

(b) Insert bolts (58) and (67).

(c) Install nuts (64) and (65).

- Torque nut (64) to between 1 and 1.2 m.daN (7.37 and 8.84 lbf.ft.).
- Torque nut (65) to between 1 and 1.5 m.daN (7.37 and 11.06 lbf.ft.).

(d) If necessary, adjust fork fitting middle hinge in order to remain within lateral clearance tolerances.

(d1) Unscrew nut (51).

(d2) Cut lockwire and loosen nuts (50), free corresponding lock-washers.

(d3) Simultaneously adjust cup bushes (52) to take up landing gear door end play.

(d4) Tighten cup bushes (52) to eliminate play on torque link swivel joint without locking.

(d5) Position lock-washers. Tighten and lockwire nuts (50).

(d6) Tighten nut (51).
Torque nut to between 0.4 and 0.6 m.daN (35 and 53 lbf.in.).

(18) Check that secondary door is flush with wing, with door resting on its four stops :
Tolerances :

- Forward : ± 1.5 mm (± 0.059 in.)
- Aft : ± 1.5 mm (± 0.059 in.)

(19) Adjust secondary door flush fitting.

NOTE : One or several landing gear manoeuvers might be required.

(a) Adjust strut (32) and tension adjuster (41) if necessary.

(b) Adjust tension adjuster (27) and strut (23) if necessary.

(20) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

(21) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position and extend landing gear slowly by adjusting hydraulic ground power unit delivery.

WARNING : DURING LANDING GEAR EXTENSION MAKE CERTAIN THAT :

- UPPER EDGE OF DOOR DOES NOT FOUL EDGE OF RIB21.
- DOOR DOES NOT FOUL FRONT CRANK DURING ITS ROTATION.

(22) With landing gear in down position, check locking.

(23) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(24) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(25) Position landing gear and shortening mechanism safety devices.

(26) Install angle fittings (1) and (2) with screws (3).

(27) Not applicable.

(28) Not applicable.

(29) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(30) Remove safety collars.

(31) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(32) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(33) Close doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(34) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(35) Remove landing gear and shortening mechanism safety devices.

<u>WARNING</u> : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.

(36) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(37) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(38) Retract landing gear slowly by adjusting hydraulic ground power unit delivery.

(39) Check that fittings (1) and (2) are correctly fitted on structure.

(40) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(41) With landing gear down, check locking.
On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated. (Gear downlocked).

(42) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(43) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(44) Connect bonding strips.

(45) Position landing gear and shortening mechanism safety devices.

F. Test

Adjust main landing gear door flap (Ref. 32-12-11, Adjustment/Test).

G. Close-Up

(1) Disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove safety barriers and check that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

(6) Install access panel 732AB or 742AB on replacement secondary door.

(7) Install access panel 572AT or 672AT.

(8) Remove warning notice from flight compartment.

NOSE GEAR AND DOORS - DESCRIPTION AND OPERATION

1. General

R
R The nose gear swings at frame 26, on two side stays. Two hydraulic actuating cylinders are mounted in parallel on these stays.

The gear retracts forward into the fuselage and uplocking is achieved by an uplock installed in the gear bay upper section. With gear down-locked, fore-and-aft bracing is provided by a telescopic drag strut.

2. Description

A. Nose Gear

The nose gear is comprised of :

(1) A nose gear leg, consisting mainly of :

(a) A cylindrical leg tapering at one end

(b) An oleo-pneumatic shock absorber connected to steering unit.

(c) A steering unit operating an integral rack type hydraulic actuator. The steering unit is connected to the shock absorber by torque links.
This unit only becomes operative during aircraft ground-roll.

(2) A drag strut which transmits fore-and-aft directional loads to the structure. Downlocking is achieved mechanically and downlock release hydraulically.

(3) Two hydraulic actuating cylinders installed in parallel.

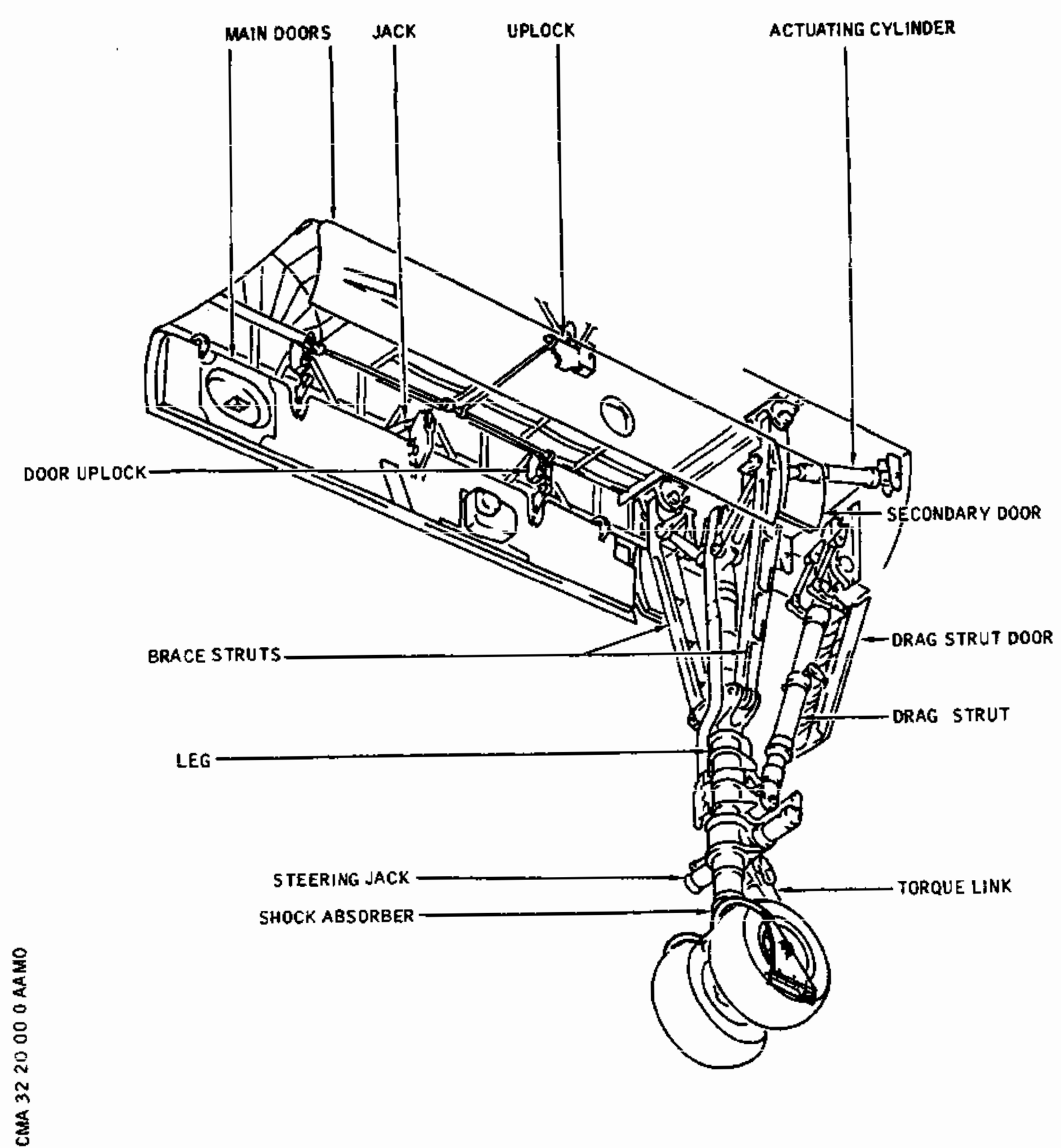
(4) A pair of in-flight braked parallel-mounted wheels.

B. Doors

There are five doors.

(1) Two main doors, hinged to the aircraft structure, which open at start of gear extension phase.
Each door is operated by a hydraulic jack.

(2) Two secondary doors forming an extension to the main



R

Nose Gear and Doors
Figure 001

doors. The doors and gear work in conjunction and are connected by link rods.

(3) A drag strut door installed on the drag strut.

NOSE GEAR AND DOORS - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. Nose Gear and Doors

A. General

(1) Visually check nose landing gear bay components for correct condition and evidence of leakage.

(2) Visually check nose landing gear for correct condition.

B. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 4.44 m (14 ft. 7 in.)	

C. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(6) Remove locking cap and open gear doors by operating handle located on nose landing gear leg.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position and display a warning notice prohibiting its use.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) Install safety sleeves and collars on gear door actuating jacks.

D. Visual Check

(1) General check

(a) Check that all lubricators are clean and in correct condition.

(b) At all attachments and hinge fittings, check that

- Nuts and bolts are fully tightened.
- Safetying devices (cotter pins, lockplates, lockwire ...) are correctly installed.
- Pins, bolts, nuts and washers are in correct condition (no evidence of oxidation).

(c) Check that bonding jumpers are in correct condition.

(2) Uplocks

(a) Check hooks for evidence of impact damage in uplock roller contact area.

(b) Check for hydraulic fluid leakage, especially at line unions.

(c) Check Emergency uplock release controls for correct condition.

(3) Landing gear actuating cylinders, door actuating jacks and telescopic drag strut.

(a) Check chromium plated rods for scoring, pitmarks, oxidation and flaking more especially in areas where chromium plating ends.

(b) Check that sliding rod adjustable end-fitting locknuts are fully tightened and safetied.

(c) Check chromium plated rods and line unions for hydraulic fluid leakage.

(d) Check for deformation and incipient cracks particularly at hinge and attach points.

(4) Landing gear leg

(a) Check that there are no traces of hydraulic fluid at upper part of shock-absorber, which could be due to leakage.

(b) Check chromium plated rod of shock-absorber for scoring, pitmarks, oxidation, flaking. Check especially area where chromium plating ends.

(c) Check that charging valves are in correct condition and that protective caps are in position.

(d) Check that landing gear uplock roller rotates freely and shows no evidence of impact damage.

(5) Doors

(a) Check for deformation at hinge fittings and uplock rollers.

(b) Check uplock rollers for impact damage. Check that they rotate freely.

(c) Check that door hinges are in correct condition and fasteners correctly safetied.

(6) Hydraulic hoses

(a) Check that attach clamps are in correct condition and correctly tightened, and that hoses show no evidence of wear.

(b) Check that hoses do not foul one another or structure or other components.

(c) Check for hydraulic fluid leakage at unions. Check that safetying devices are efficient.

(7) Hydraulic lines

(a) Check for deformation, incipient cracks and evidence of impact, particularly at elbows and unions on components.

(b) Check that attach clamps are in correct condition and correctly tightened.

(c) Check for evidence of hydraulic fluid leakage at line unions.

(8) Hydraulic components

(a) Check for security of attachment and correct safetying.

(b) Check for hydraulic fluid leaks at line unions.

(c) Check controls of mechanically actuated components for correct condition.

(9) Electrical wiring

(a) Check that electrical connectors are correctly connected and safetied.

(b) Check that wiring is in correct condition and correctly attached.

E. Close-Up

(1) Remove safety collars.

(2) Remove access platform.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(5) Close doors by operating handle located on nose landing gear leg. Install locking cap.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(9) Remove warning notice from flight compartment.

NOSE LANDING GEAR - DESCRIPTION AND OPERATION

1. General
(Ref. Fig. 001)

The nose gear is hinged to the aircraft by two brace struts reinforced by two brace arms. The brace struts are connected to two fork fittings located at FR26. The gear swings on these two fittings and retracts forward into the gear bay.

The two brace struts together with the two brace arms immobilize the tapered-end leg which houses a steerable oleo-pneumatic type shock absorber.

The leg and shock absorber are assembled by means of a system
R of locking dogs which serve for quick attach-detach of the shock absorber from the leg without removal of the gear leg.

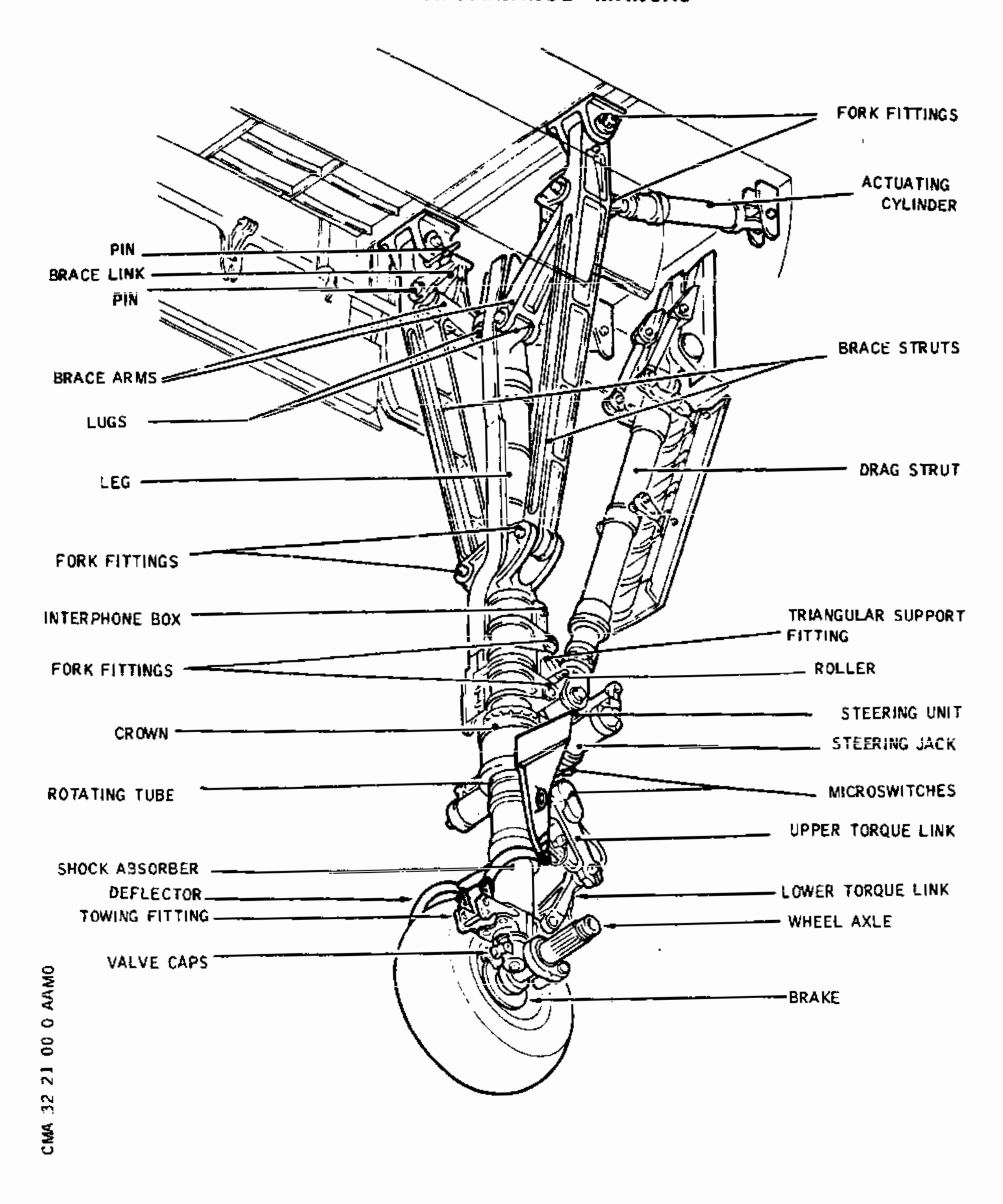
A steering jack, serves for steering of the wheels via the torque links.

2. Leg
(Ref. Fig.001 and 002)

The leg assembly includes :

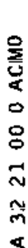
A. Leg

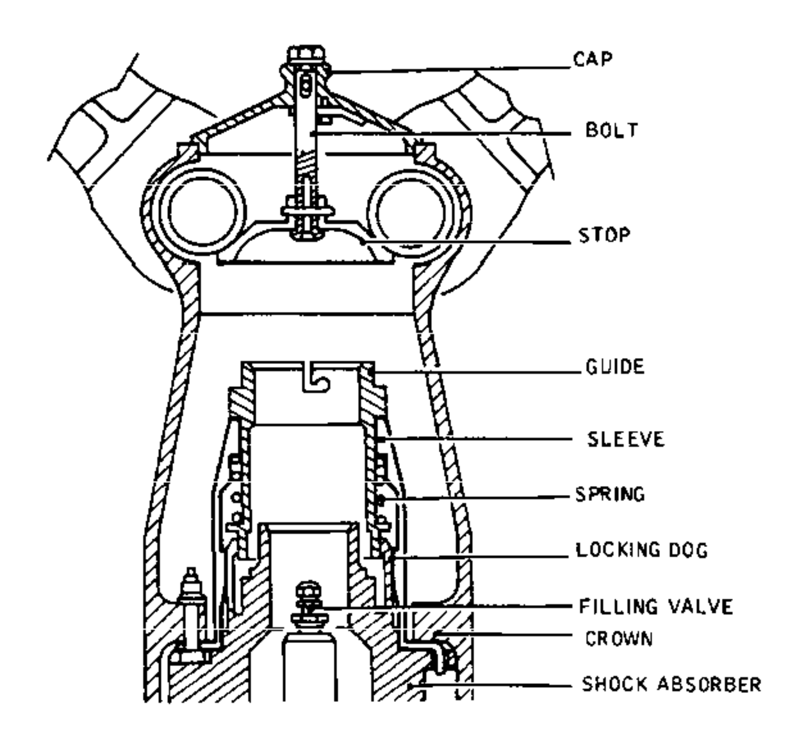
(1) The top of the leg is closed off by a cap incorporating a stop and is secured by a bolt. Access to the shock absorber filling valve and locking system is gained by removing this cap. The locking system installed at the top of the leg includes a sleeve, a guide bush and a spring.



R

Nose Landing Gear
Figure 001





Leg - Upper Section
R Figure 002

(2) Two brace struts are connected to two fork fittings integral with the leg centre section.

(3) Two brace arms are secured to two lugs on the leg top section.

(4) The end of each brace strut includes two eye fittings. The swivel joint pin is installed in one of these fittings and the other connects with the actuating cylinder.

(5) The end of each brace arm is connected to the brace strut by a hinge pin.

(6) Two brace links secured to the brace struts and brace arms are fitted with spherical bearings. The secondary door control rods are connected to these bearings.

(7) A triangular support fitting attached to the bottom of the leg by two fork fittings.

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The support fitting includes a spherical bearing connected to the drag strut, and a pin incorporating at one end the gear uplock roller. The roller can be adjusted sideways.

(8) A steering jack incorporating a gear rack is installed on the leg crown.
The rack moves a rotating tube with integral gear teeth. This tube is connected to the upper torque link.
R A mechanical actuator located underneath the gear rack operates a microswitch. This microswitch prevents
R retraction of the nose gear when the nose wheels are
R not aligned with the aircraft fore-and-aft centreline.

The hinge pin connecting the upper torque link to the
R rotating tube includes a mechanical actuator installed at each end.
R Each mechanical actuator operates a shock absorber compressed microswitch.
R These microswitches ensure, with the shock absorber expanded, limitation of braking of main gears above a certain aircraft attitude.
They prevent use of the steering control and cut off fuel during ground refuelling when aircraft balance shifts too far aft.

(9) An electro-hydraulic steering unit is installed on
R the steering jack. This unit provides steering of the
R wheels through the steering jack during normal operation as well as during shimmy damping.

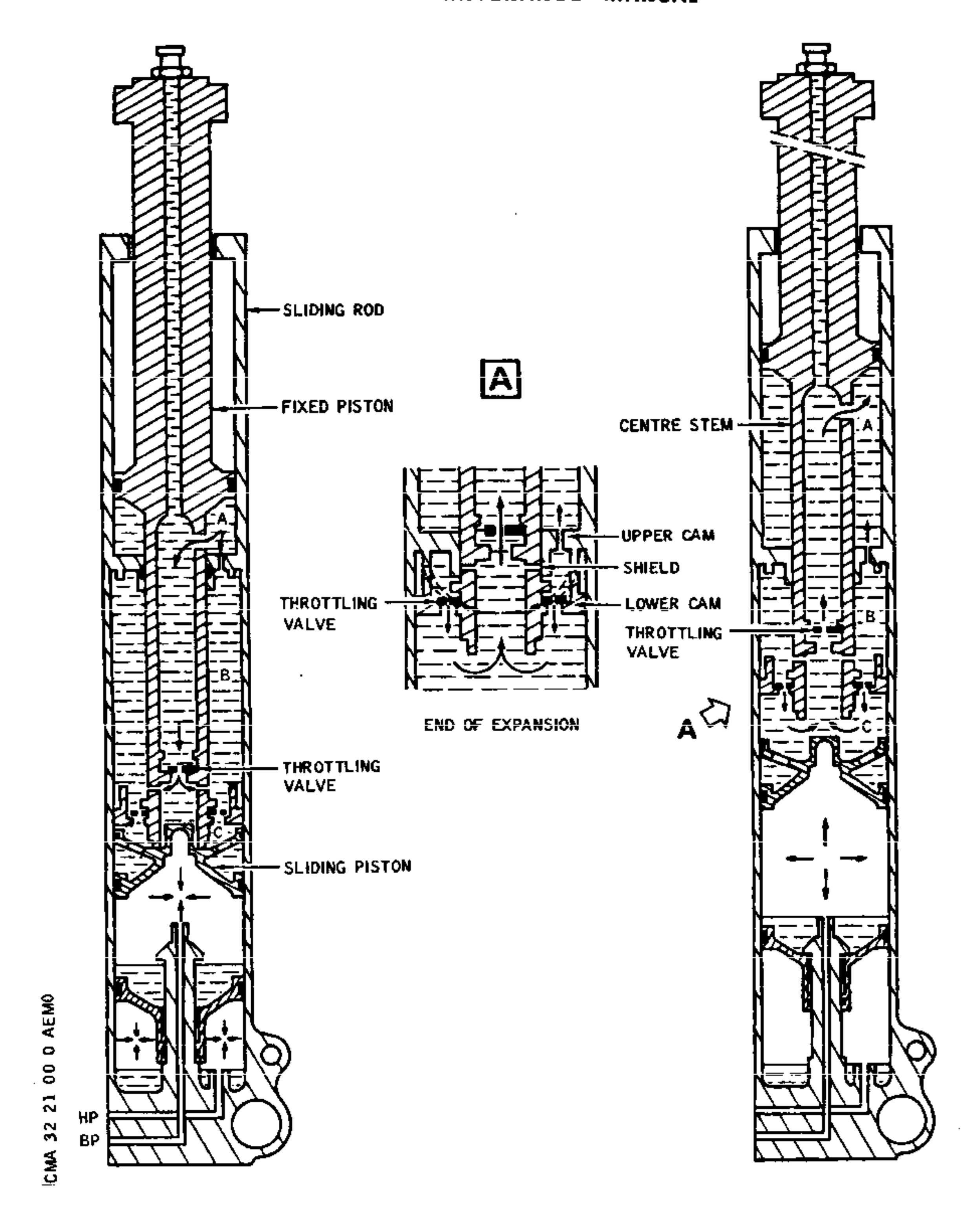
(10) An interphone box attached to the leg provides for communication between the flight compartment and the ground, during ground operations.

B. Shock Absorber
(Ref. Fig.001 and 003)

R The shock absorber absorbs landing impact landing loads and ground surface irregularities during ground roll.
The shock absorber furthermore ensures that the gear
R wheels are aligned with the aircraft fore-and-aft centreline after take-off.

(1) Description

R The shock absorber is of the oleo-pneumatic double-acting type with slowdown at the end-of-expansion. It incorporates two dry nitrogen chambers and a hydraulic fluid chamber.



Shock Absorber - Operation
Figure 003

R

The shock absorber includes :

(a) A centre stem separated in the middle by a fixed piston on which slides and turns the sliding rod.

R R - The upper end includes a latching mount with locking dogs. The locking dogs serve for quick-attach-detach of the shock absorber in the leg.

- The lower end includes an external throttling valve, with calibrated holes, and an internal throttling valve.
It furthermore includes rollers which align the
R wheels with the aircraft fore-and-aft centre-line.

(b) A sliding rod guided on the outside by the bore of the leg and on the inside by the fixed piston incorporating a seal. The fixed piston closes off the annular chamber of chamber (A).
At the top end, the sliding rod includes an internal sleeve incorporating the wheel centring cam. In this cam is embodied a shield sliding on the centre stem. Six calibrated holes in the shield connect annular chamber A with chamber B.

R (c) The piston separating the low pressure nitrogen chamber from the fluid chamber B is free to move
R inside the sliding rod.

(d) Two charging valves located at the bottom of the sliding rod. The upper one is connected to the HP chamber and the lower one to the LP chamber. Simultaneous action on the two valves is prevented by their covers.

(e) A lower piston which is free to slide on the charging tube separates the two nitrogen chambers. The top end of the charging tube limits travel of the lower piston.

(f) A double axle rotating in two tapered-roller bearings. The axle is rotated by two wheels mounted in parallel.
During nose gear retraction the wheels are prevented from turning by a hydraulic brake.

(g) A towing fitting. Wheel turning angle while towing is 60° to each side of the aircraft centreline.

(h) The lower torque link connects the wheel steering rotating tube to the shock absorber.

(j) Two deflectors are attached to tow fitting and wheel axle to prevent ingestion of water into engines during ground roll on a wet runway. The deflectors are hinged at upper part to facilitate removal of wheels.

(2) Operation

During shock absorber compression, the sliding rod moves upwards and nitrogen pressure increases in the HP and LP chambers. The fluid is expelled from chamber A to chamber B through the six holes in the sliding rod shield and through the throttling valve, held on its seat under the pressure of the fluid. The sliding piston moves downwards and compresses the nitrogen in the LP chamber. When pressure in the LP chamber exceeds pressure in the HP chamber the lower piston moves downwards thus limiting shock absorber compression.

During expansion, the sliding rod moves downwards under the pressure of the nitrogen and fluid is expelled from chamber B to chamber A through the two holes in the centre stem and the six holes on the sliding rod shield. The fluid is then transferred to chamber C through the throttling valve held on its seat under the pressure of the fluid. From chamber C the fluid flows freely to chamber A through the centre stem, the throttling valve being lifted off its seat.

At the end of expansion the upper cam shield shuts off the two holes in the centre stem. Passage of the fluid from B to A is limited to the six holes in the upper cam shield and the fluid flow is thus restricted. Displacement of the sliding rod is therefore slowed down when the upper and lower cams come into contact.

C. Aircraft Aft CG Limit (Tail-Tipping Limit) Reference Marks on Nose Landing Gear.

Not applicable.

NOSE LANDING GEAR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The two nose gear brace struts are attached to two symmetrical fork fittings mounted in the nose landing gear bay at Frame 26. The brace struts are hinged at the fork fittings by means of two hollow shafts. Each shaft includes a lubricating insert sleeve and is fitted with a swivel joint at its inboard end. Only the left hand hinge fitting is equipped with two washers preventing lateral movement of nose gear.

2. Nose Gear

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183 621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000

DESCRIPTION	PART NO.
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Safety Stay	
Electrical Ground Power Unit	
Wrench - Nose Landing Gear Hinge Pin Nut	D924162000
Safety Sleeve - Nose Landing Gear Doors	E925002000
Trolley - Nose Landing Gear Ground Handling	D930701000
Extractor/Inserter - Nose Landing Gear Pintle Pins	D925364000
Handling Equipment - Nose Landing Gear	E935022000

**ON A/C ALL

Circuit Breaker Safety Clips

Access Platform 3.220 m (10 ft. 7 in.)

Blanking Plugs/Caps

Hydraulic Fluid Spillage Container

Common Grease (Ref. 20-30-00, No.051)

Lockwire Dia. 0.70 mm (0.028 in.)
(Corrosion Resistant Steel)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that lan-

ding gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(5) Jack up the aircraft (Ref. 07-11-00).

(6) Position safety stay.

(7) Check that visor is not uplocked.

(8) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(11) Remove locking cap and open landing gear doors by operating handle located on nose gear leg.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(15) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(16) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(17) Install safety sleeves on door actuating jacks.

(18) Release shock absorber pressure (Ref. 32-21-24, Servicing).

(19) Remove the two secondary door link rod-to-nose gear leg bolts (50) at fork fittings (51) on scissors (40).

(a) Remove cotter pins (56), nuts (55) and washers (54). Remove bolts (50) and washers (49).

(b) Tie back secondary doors and link rods (52).

NOTE : Bushes (53) must remain in position in rod (52) eye end fittings.

(20) Remove drag strut door (Ref. 32-22-13, Removal/Installation).

(21) Disconnect the two actuating cylinders from gear leg and attach to adjacent structure with slings (Ref. 32-31-68, Removal/Installation).

(22) Disconnect telescopic drag strut from gear leg and attach to adjacent structure with sling (Ref. 32-31-71, Removal/Installation).

(23) Remove deflector (Ref. 32-21-11, Removal/Installation).

(24) Remove wheels (Ref. 12-37-00).

(25) Remove brake units (Ref. 32-42-21, Removal/Installation).

(26) Position trolley D930701000 under nose gear.

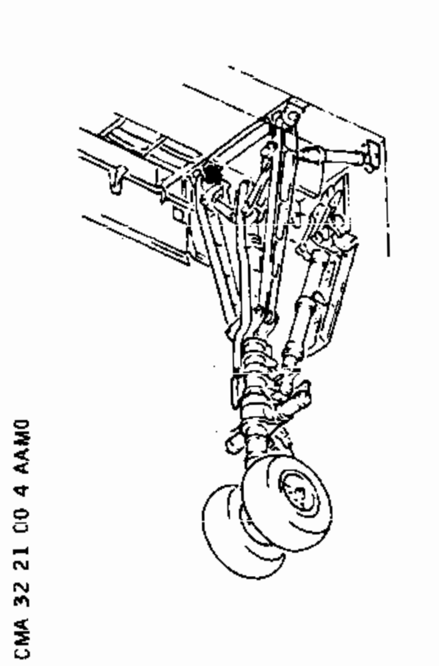
(27) Position handling equipment E935022000.

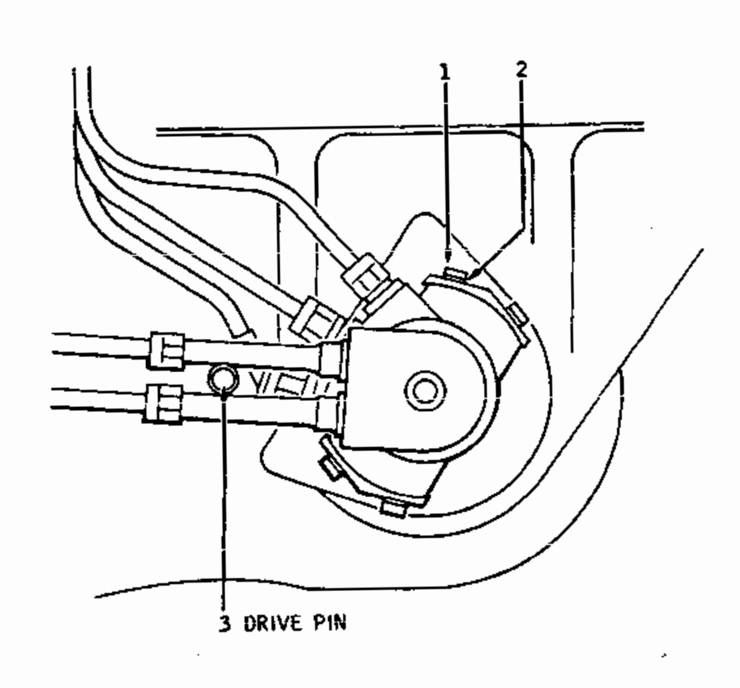
(a) Attach shackle (22) onto load carrying beam at frame 26.

(b) Attach handling equipment E935022000 with the two pip pins (23).

(c) Slightly tighten cable.

C. Remove (Ref. Fig.401 and 402)





Swivel Joint
Figure 401

(1) Disconnect electrical wiring and cap electrical connectors.

(2) On LH and RH swivel joints, disconnect hydraulic lines. Blank off open line ends and swivel joints with blanking caps.

(3) Remove LH and RH swivel joints.

(a) Cut and remove lockwire and remove bolts (1).

(b) Retain washers (2) for reinstallation.

(4) At each landing gear hinge

(a) Remove sleeve (27).

(b) Remove cotter pin (32)

(c) Unscrew nut (31) and remove washer (30)

(d) Remove shaft (28) using tool D925364000 as follows :

(d1) Uncouple anchor pin (17) centre tube (14) and extraction shaft assembly (11) by removing pins (13) and (15).

(d2) Remove guide end-fitting (10) and insert extraction shaft (11) into shaft to be removed.

(d3) Screw in and tighten guide end-fitting (10).

(d4) Remove knurled pin (18) and end fittings (16) and (19) from anchor pin (17).

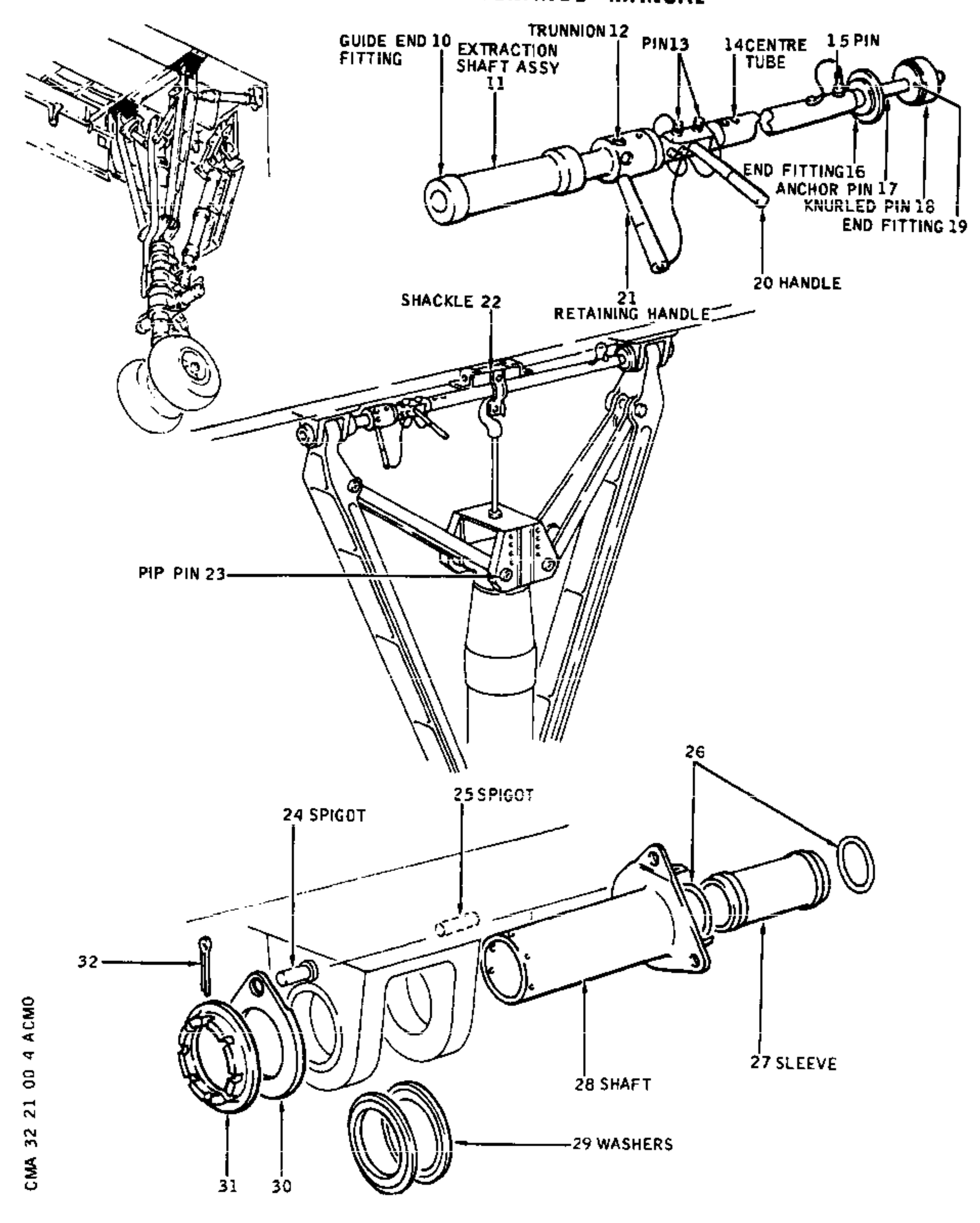
(d5) Position anchor pin (17) with end fitting (16) corresponding to inside diameter of opposite pin. Also position other end fitting (19) on same side as end fitting (16).
Immobilize this assembly with knurled pin (18).

(d6) Assemble centre tube (14), anchor pin (17) and trunnion (12) with pins (13) and (15).

(d7) Screw in retaining handle (21).

<u>NOTE</u> : Adjust cable tension to facilitate extraction of shaft and maintain correct alignment of landing gear/ structure hinges at end of shaft extraction.

(d8) Hold handle (20) in one hand and unscrew trunnion (12) until shaft (28) is fully



Nose Gear
Figure 402

extracted.

(d9) Remove tool D925364000.

NOTE : To extract second shaft, repeat the above operations. Reverse shouldered ends of tool.

(5) Slowly lower landing gear : retain washers (29) from LH hinge for reinstallation.

(6) Support landing gear/tool D930701000 assembly.

D. Preparation of Replacement Component (Ref. Fig. 403) Hinge Point

(1) Check that structural fittings are in correct condition. Clean and grease with Product No.051.

(2) Check that nose gear fork fittings are in correct condition. Clean and lubricate with Product No.051.

(3) On removed nose gear leg, on scissors (40).

(a) Remove cotter pin (45), nut (44), washer (43) and bolt (41).

(b) Remove anti-rotation fitting (42) and retain for reinstallation.

(c) On fork fitting (51) remove spacers (47) and (48).

(4) On replacement nose gear leg, on scissors (40).

(a) Remove retaining bush (painted red) and remove nut, washer and bolt securing fork fitting (51) on scissors (40).

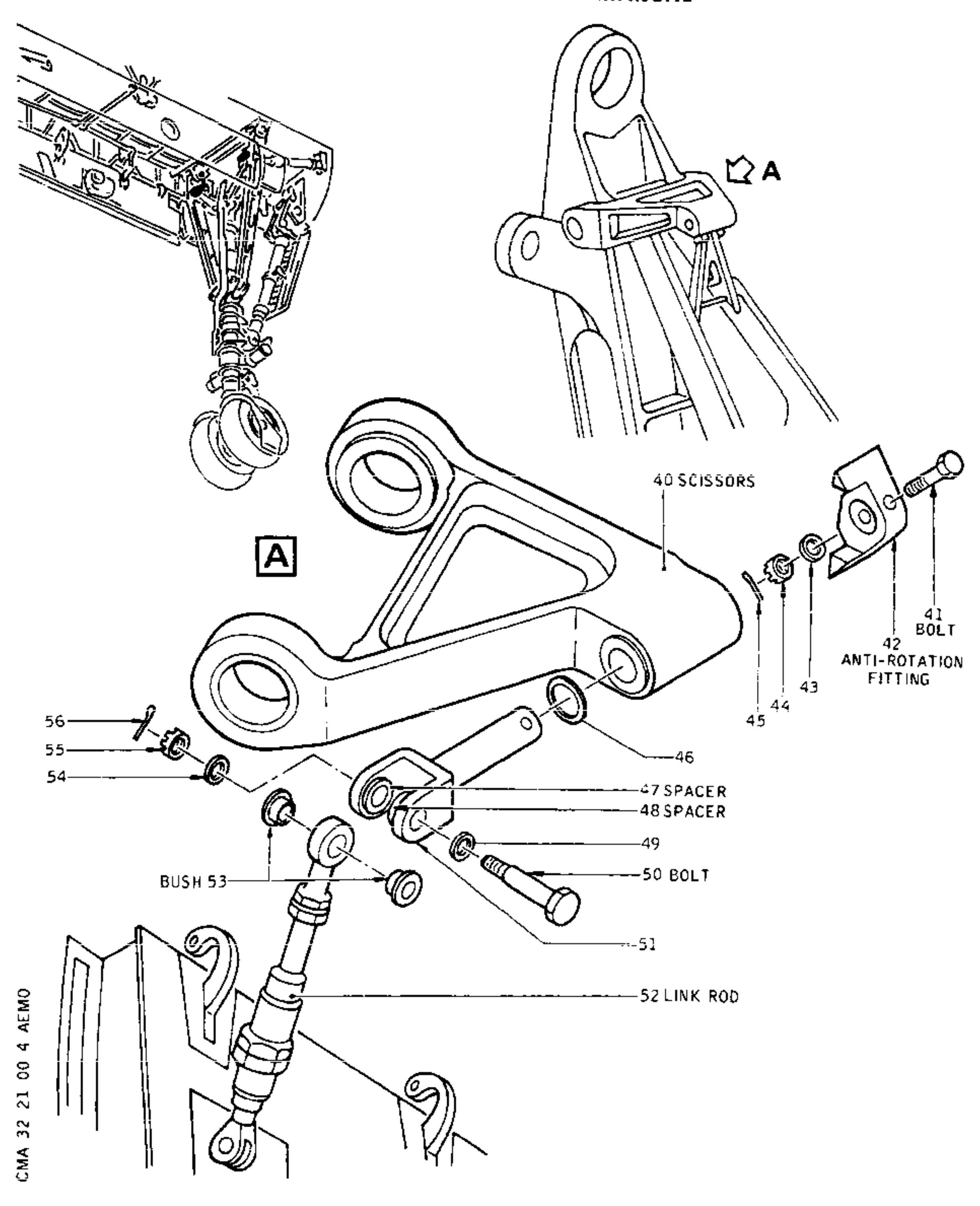
NOTE : This assembly shall be installed on removed nose gear leg.

(b) Make certain that washer (46) is in position.

(c) Install anti-rotation fitting (42).

(d) Install bolt (41), washer (43) and nut (44). Safety nut (44) with a cotter pin.

(e) Install spacers (47) and (48) on fork fitting (51).



Secondary Door Link Rod-To-Nose gear Leg
Figure 403

E. Install (Ref. Fig.401 and 402)

(1) Using tool D930701000, position landing gear under its bay.

(2) Attach landing gear to tool E935022000.

(3) Slightly tighten cable.

(4) Grease washers (29) with Product No.051 and install on LH hinge.

(5) Remove tool D930701000.

(6) Adjust cable tension of lifting tool in order to align landing gear/structure hinges.
Check that washers (29) are aligned.

(7) On each landing gear hinge.

(a) Lubricate shaft (28).

(b) Insert shaft (28) using tool D925364000 as follows :

(b1) Remove pins (13) and (15) and guide end-fitting (10).

(b2) Slide shaft (28) on smooth sleeve of extraction shaft assembly (11).

(b3) Screw in guide end-fitting (10) and fully tighten.

(b4) On structural fork fitting, position anchor pin (17) equipped with end-fitting (16).
Position other end-fitting (19).
Immobilize this assembly by means of knurled pin (18).

(b5) Assemble centre tube (14) and anchor pin (17) with pin (15).
Unscrew extraction shaft (11) as little as possible then assemble with centre tube (14) by means of pins (13).

(b6) Screw in retaining handle (21).

(b7) Hold handle (20) with one hand, and screw in trunnion (12) until shaft (28) is fully en=gaged.

NOTE : During shaft (28) engagement, check its position in relation to spigot (25).

(b8) Remove tool D925364000.

NOTE : Renew the above operations to install second shaft.
Reverse shouldered ends of tool.

(8) Install washer (30) on each shaft (28) taking care to position it correctly in relation to spigot (24).

(9) Install nut (31) on each shaft (28) and fully tighten. Torque to between 10 and 15 lbf.in. (0.110 and 0.170 m.daN).

(10) Safety shafts (28) with cotter pins.

(11) Insert grease sleeve (27) with new seals (26) into each shaft (28).

(12) Install LH and RH swivel joints with bolts (1) and washers (2), and position drive pin (3) between the two lines on the moving part of the swivel joint. Tighten and wirelock bolts (1).

(13) Remove blanking caps and connect hydraulic lines to swivel joints.

(14) Remove handling equipment E935022000.

(15) Couple actuating cylinders to gear leg hinges. (Ref. 32-31-68, Removal/Installation).

(16) Couple telescopic strut to gear leg hinge. (Ref. 32-31-71, Removal/Installation).

(17) Install drag strut door (Ref. 32-22-13, Removal/ Installation).

(18) Attach the two secondary door-to-nose gear leg link rods.

NOTE : Make certain that bushes (53) are in position in each link rod (52) end fittings.

Make certain that spacers (47) and (48) are in position on each fork fitting (51).

(a) At each link rod (52)-to-fork fitting (51) hinge

point install bolt (50) equipped with washer (49).
Install washer (54) and nut (55).
Torque nut (55) to between 60 and 70 lbf.in.
(0.677 and 0.790 m.daN).
Safety nut (55) with a cotter pin.

(19) Connect electrical wiring.

R B (20) (a) Charge shock absorber (Ref.32-21-24, Servicing).
R B (b) Charge steering pressure supply unit (Ref.32-51-62,
R B Servicing).

(21) Install brake unit (Ref. 32-42-21, Removal/Installation).

(22) Install wheels (Ref. 12-37-00).

(23) Install deflector (Ref. 32-21-11, Removal/Installation)

(24) Lubricate hinge points (Ref. 12-22-32).

(25) Remove spillage fluid container.

(26) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(27) Remove safety sleeves.

(28) Remove access platform.

(29) Remove safety clips and tags and reset circuit breakers.

(30) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(31) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(32) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(33) Close gear doors by operating handle located on nose gear leg. Install locking cap.

(34) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(35) Shut down and depressurize Green hydraulic system

(Ref. 29-11-00, Servicing).

F. Tests

RB (1) Adjust nose wheel steering (Ref. 32-51-00 Adjustment/
RB Test) in conjunction with nose wheel alignment check
RB (Ref.32-21-00 Adjustment/Test).

RB NOTE: Nose centre index to be affixed after alignment
RB confirmed (Ref. Fig. 501 detail B).

RB (2) Adjust nose wheel centred microswitch (Ref. 32-31-94
RB Removal/Installation).

RB (3) Adjust nose gear weight switch actuator (Ref. 32-31-96
RB Removal/Installation).

RB (4) Check and, if necessary, adjust roller position in uplock
RB hook (Ref. 32-31-67, Adjustment/Test).

RB (5) Check and, if necessary, adjust the two nose gear
RB actuating cylinders (Ref. 32-31-68, Removal/Installation).

RB (6) Check and, if necessary, adjust secondary doors
RB (Ref.32-22-12, Adjustment/Test).

RB (7) Bleed nose wheel brake (Ref. 32-42-21, Servicing).

RB (8) Check for evidence of hydraulic leakage.

G. Close-Up

(1) If necessary top up Green and Yellow hydraulic tanks (Ref. 12-12-29).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors.

(4) Check that area under aircraft is clear.

(5) Remove safety stay.

(6) Lower aircraft onto its wheels.

(7) Remove warning notices.

NOSE GEAR - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT NOSE WHEEL STEERING SAFETY PIN IS INSERTED IN INTERPHONE BOX LOCATED ON NOSE LANDING GEAR LEG.

1. General

Adjustment of nose wheel alignment after replacement of nose gear or shock absorber.

B NOTE : Wherever checking fixture T8702D000001 is referred to
B substitute 2-BA19778T.

2. Adjust alignment of nose gear wheels

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater Than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Jack-Shock Absorber Compression	1761/1
Sheet Metal 2 m x 2 m (78.740 in x 78.740 in)	
**ON A/C ALL	
B Checking Fixture - Nose Landing Gear B Alignment	2-BA19778T (replaces T8702D000001)

DESCRIPTION	PART NO.
Plumb-Line	D921621000
B Open End Wrench	C46868 or
B	2-32-1515-1BA
Sealant (Ref. 20-30-00, No.361)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Install safety stay.

(6) Position a metal sheet (2 m x 2 m)(78.740 in x 78.740 in) under nose wheels.

(7) Release shock absorber pressure.

(a) Slowly open valve of LP chamber.

(b) Compress shock absorber by about 250 mm (9.842 in) using jack 1761/1.

(8) Rotate sliding tube so as to align position mark (7) on steering unit (6) with mark on landing gear leg.

(9) Hold assembly in this position.

(10) Under fuselage install plumb-line D921621000 at points U and C and draw aircraft centreline on ground.

(11) Position checking fixture T8702D000001 and attach it to a wheel. Mark range of tool on wheel with a pencil.

(12) Turning wheel, mark point A (forward) and point B (rear) on sheet.

(13) Slowly remove tool and give wheel half a turn.

(14) Attach tool according to pencil marks.

(15) Repeat operation (12).

(16) If points A and B do not coincide with points A and B already marked, mark mid point of points obtained.

(17) Mark projection of these two mid points on projection of aircraft longitudinal axis.

(18) Check that each mid point is at equal distance from aircraft longitudinal axis.

If this is not so, carry out following adjustment.

C. Adjust

(1) Remove bolt (4) and stop washer (3).

R CAUTION: TO ROTATE BOLT (1) IT IS NOT NECESSARY TO RELEASE
R THE NUT AND LOCKING BOLT AT ITS OUTBOARD END.
R SHOULD THE NUT BE INADVERTENTLY RELEASED, REFER
R TO 32-21-24 R/I 2E (12) FOR RECTIFICATION.

(2) Steer wheels by screwing or unscrewing bolt (1) using open wrench C46868 to align wheels with longitudinal aircraft axis.

(3) From this position, line up a groove in spherical bearing retainer (5) with a slot in torque link branch (2).

(4) Install stop washer (3) and bolt (4). Safety nut with cotter pin.

(5) Coat head of bolt (4) and its nut with Product No.361.

D. Close-up

(1) Remove plumb-line D921621000.

(2) Remove checking fixture T8702D000001.

(3) Remove jack 1761/1.

(4) Charge shock absorber (Ref. 32-21-24, Servicing).

(5) Check that area under aircraft is clear.

(6) Remove safety stay.

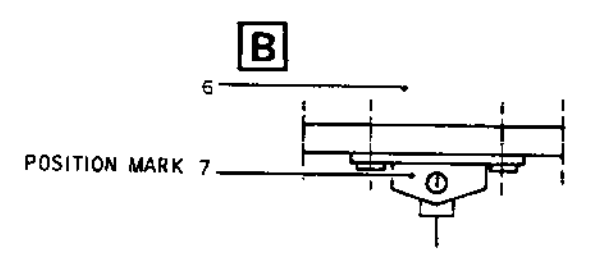
(7) Lower aircraft onto wheels.

B
A

A

TORQUE LINK 2
3
4
5 SPHERICAL BEARING
BOLT 1

B



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Wheel Alignment Adjustment
Figure 501

NOSE GEAR - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT NOSE WHEEL STEERING SAFETY PIN IS INSERTED IN INTERPHONE BOX LOCATED ON NOSE LANDING GEAR LEG.

1. General

A. Nose gear verticality check

B. Nose gear wheel alignment check

2. Nose Gear Verticality

A. Equipment and Materials

	DESCRIPTION	PART NO.
	Jack-Lifting Capability greater than 81600 daN (183621 lbf)	07-10-0001
	Safety-Jack Adapter	D920113200
	Jacking Pad-Nose	D925370000
R	Balancing Device - Pyramid Adapter-LH	D921485000
R	Balancing Device - Pyramid Adapter-RH	D921485001
R	Pyramid Adapter - Lifting-LH	D924008000
R	Pyramid Adapter - Lifting-RH	D924008001
	Safety Stay	
	Sight Tube	
	Sightings Rods Wing	E920115312
	Sightings Rod Fuselage	E920115112
	Sightings Rod Fuselage	E920115114
	Tripod Mounted Telescopic Tube	

DESCRIPTION	PART NO.
Clinometer	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Jack up the aircraft (Ref. 07-11-00).

R (5) Position safety stay.

(6) Carry out transversal and longitudinal levelling of aircraft (Ref. 08-11-00).

C. Check Verticality of Nose Gear

(1) Place clinometer on nose gear leg in X axis.

(a) Record angle.

(b) This angle should be 1° rearwards.

(2) Place clinometer on nose gear leg in Y axis.

(a) Record angle.

(b) This angle should be 90°.

D. Close-Up

(1) Remove levelling tools.

(2) Make certain that the area under the aircraft is clear.

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

3. Nose Gear Wheel Alignment Check

(Ref. Fig. 601)

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack-Lifting Capability Greater than 81600 daN (183621 lbf.)	07-10-0001
Safety-Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter-LH	D921485000
Balancing Device - Pyramid Adapter-RH	D921485001
Pyramid Adapter - Lifting-LH	D924008000
Pyramid Adapter - Lifting-RH	D924008001
Safety Stay	
Jack - Shock Absorber Compression	1761/1
Metal Sheet 2 m x 2 m (78.740 in. x 78.740 in.)	
**ON A/C ALL	
B Checking Fixture - Nose Landing Gear B Alignment	2-BA19778T(replaces T8702D000001)
Plumb-Line	D921621000

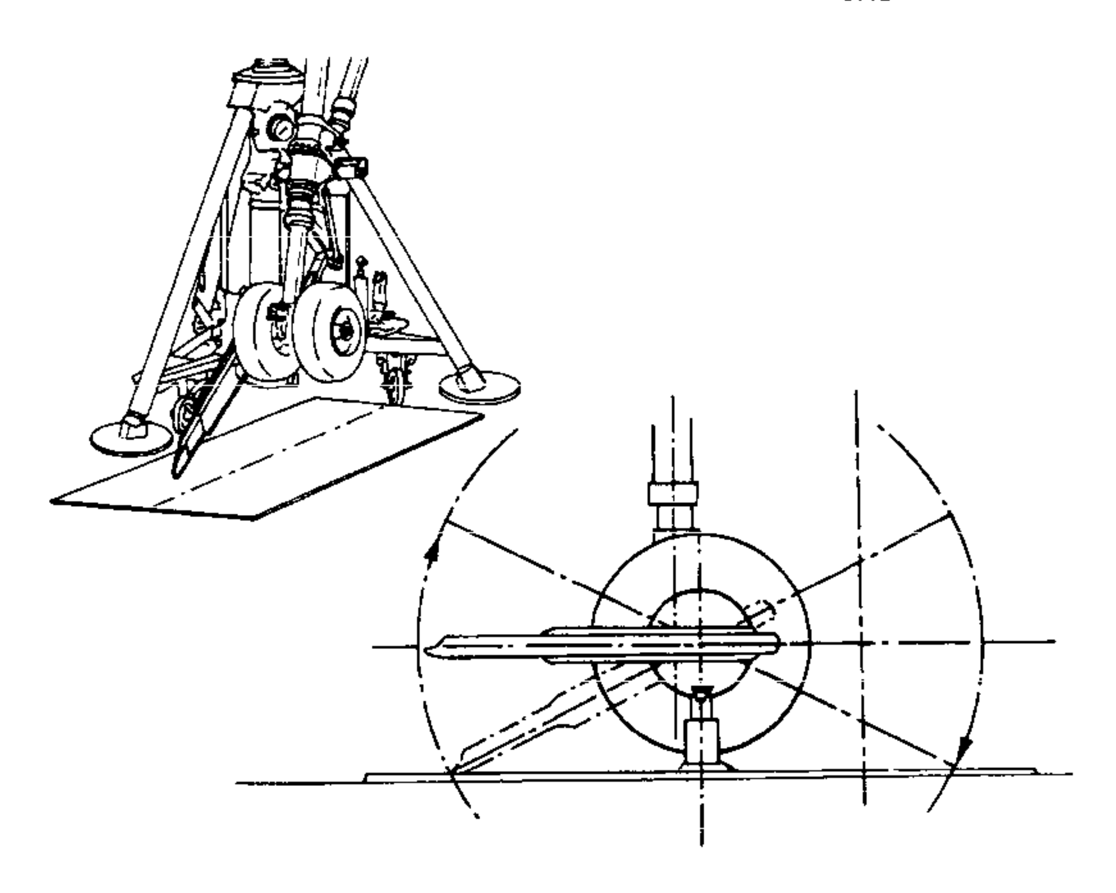
B. Prepare

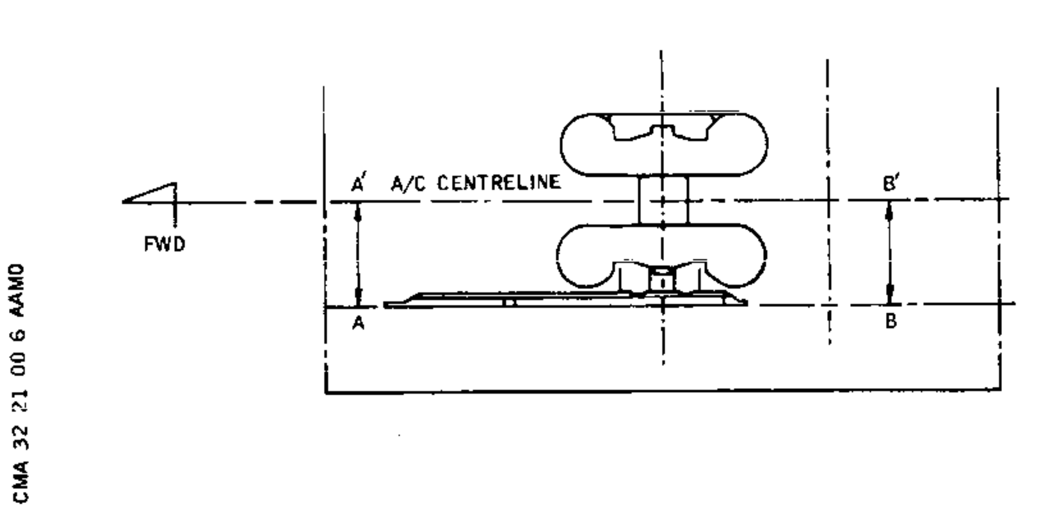
(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Jack up the aircraft (Ref. 07-11-00).





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R

Nose Gear Wheel Alignment
Figure 601

(5) Install safety stay.

C. Check Nose Gear Wheel Alignment

(1) Place metal sheet (2 m x 2 m)(78.740 in. x 78.740 in.) under nose gear wheels.

(2) Release shock absorber pressure.

(a) Slowly open LP chamber valve.

(b) Compress shock absorber by about 250 mm (9.842 in.) using jack 1761/1.

(3) Turn sliding tube to align position mark on steering sleeve with mark on landing gear leg.

(4) Hold assembly in this position.

(5) Under fuselage, install plumb-line D921621000 at points U and C and draw projection of aircraft centreline on metal sheet.

(6) Position tool T8702D000001 and attach to one wheel. Mark tool contact on wheel using a pencil.

(7) Turn wheel and mark on metal sheet point A to the front and point B to the rear of the wheel.

(8) Slowly remove tool and rotate wheel half a turn.

(9) Attach tool according to pencil marks.

(10) Repeat step (7).

(11) If points A and B do not correspond with points A and B already plotted, mark mid point of the points obtained.

(12) Project these two mid points to cut projection line of longitudinal aircraft axis drawn on metal sheet at points A' and B'.

(13) The difference in length between the two projections AA' and BB' must not exceed 4 mm (0.157 in.).

D. Close-Up

(1) Remove plumb-line D921621000.

(2) Remove tool T8702D000001.

(3) Remove jack 1761/1.

(4) Charge shock absorber (Ref. 32-21-24, Servicing).

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(6) Remove safety stay.

(7) Lower aircraft onto its wheels.

NOSE LANDING GEAR - BRACE STRUTS - APPROVED REPAIRS

1. General

The purpose of this procedure is to repair minor damage to the nose gear brace struts caused by rubbing against the main door edge rivets during Ultimate Emergency extension.

2. Permissible Damage

The maximum depth of damage for which rework of the brace strut is permitted is 0.0787 in (2 mm).

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3. Repair of Brace Strut

A. Equipment and materials

	DESCRIPTION	PART NO.
R	Alocrom 1200 (Ref. 20-30-00, No.638)	-
R	Epoxy Primer 7828A (Ref. 20-30-00, No.649)	-
R	Epoxy Primer 7020-727D (Ref. 20-30-00, No.630)	-
	Access platform	-

B. Prepare

(1) Position access platform.

C. Repair (Ref. Fig. 801)

(1) Measure the depth of any damage to the brace strut.

NOTE: The maximum allowed depth of any damage is 0.0787 in (2 mm).

R (2) Smooth out the edges of the damage with a file or
R abrasive paper.

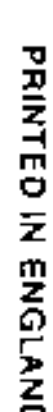
R (3) Vapor blast reworked area.

R (4) Protect reworked areas with Alocrom 1200 (Product
R No.638). (Ref. SRM 51-61-30).

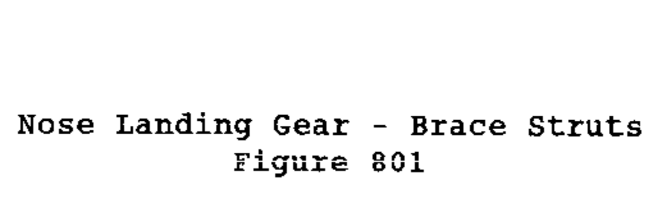
BRACE STRUTS

A

MARKS OF
RIVET HEADS



CMB 32 21 00 8 AAM0 00



R

Nose Landing Gear - Brace Struts
Figure 801

R (5) Touch up paint with a coat of Product No.649 and a top coat of Product No.630.

D. Close-Up

Not applicable.

END OF THIS SECTION

NEXT

NOSE GEAR DEFLECTOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION

1. General

The deflector mounted in front of the nose landing gear wheels prevents ingestion of water into the engines during ground roll.

2. Nose Gear Deflector

A. Equipment and Materials

	DESCRIPTION	PART NO.
	Wrench - Rack Flat - Nose Landing Gear Wheel Axle Nut	E930039000
**ON A/C ALL		
B B	Tool kit - Nose Landing Gear - Water Deflector - Comprising	D921627000
B B	Assembly/Extraction Tool 12 mm dia. thread.	D921627001 (HBTE0039)
B B	Assembly/Extraction Tool 20 mm dia. thread.	D921627002 (HBTE0040)
**ON A/C ALL		
	Nose and Main Gear Wheel Change Jack (Spec. M.F.P) (Inflated Tyres)	07-20-0001
	Jack Adapter	C22341-2
	Hexagonal Wrench	C1-46079
	Wrench - Rack, Flat - Nose Landing Gear Wheel Axle Nut	E930039000
	Wheel Chocks	
	General Lubricants (Ref. 20-30-00, No.051)	
	General Lubricants (Ref. 20-30-00, No. 059)	

B. Prepare

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(2) On centre console, make certain that brake selector lever is in NORM position.

(3) On centre console, make certain landing gear and door Emergency control lever is in NEUTRAL position.

(4) Position wheel chocks.

C. Remove (Ref. Fig. 401)

(1) Disconnect deflector at its attachment on towing fitting.

(a) Using tool kit D921627000 remove lock washers (1) remove nuts (2) and retain recessed washers (3) for reinstallation.

(b) Remove pins (5) and retain shims (4) for reinstallation.

(2) Disconnect deflector (10) at its attach points on axle ends

(a) Remove spring clips (8)

(b) Using wrench E930039000 remove nuts (7). Discard O-ring (9)

(3) Remove deflector (10)

D. Preparation of Replacement Component.

NOTE : The replacement deflector is equipped with nuts (12) and pins (13).

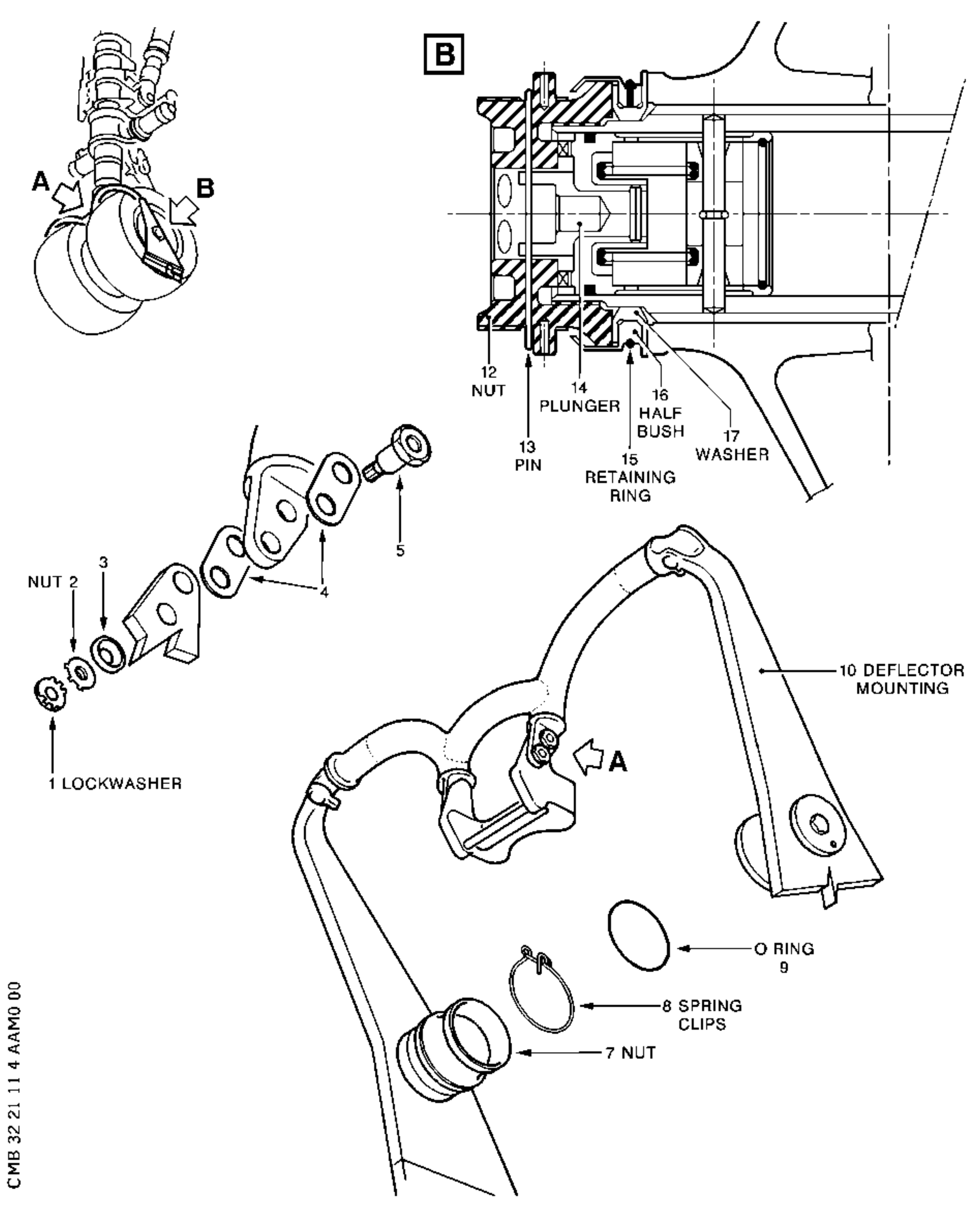
(1) On replacement deflector

(a) Remove spring clips (8)

(b) Remove nuts (12)

(c) Remove pins (13)

(2) At each end of axle



Nose Gear Deflector
Figure 401

(a) Remove pin (13).

(b) Position hexagonal wrench C1-46079 into hexagonal nut (12) head so as to engage wrench balls in ball housings on nut.

(c) Loosen nut (12) assemblies.

CAUTION: DO NOT REMOVE.

(3) Position jack adapter under nose gear shock absorber sliding tube as follows:

(a) Slightly loosen jack adapter nut to allow movement of arms.

(b) Place cup on longer arm of jack adapter on jacking pad under shock absorber sliding tube.

(c) Position fork fittings of other arm on tow fitting and install the two pins.

(d) Tighten jack adapter nut to immobilize the two arms.

(4) Position jack below jack adapter jacking pad and lift wheels clear of ground.

(5) Remove the two nut (12) assemblies from axle.

NOTE: The two half-bushes (16), washer (17) and retaining ring (15) must remain in position on nuts (12).

(6) On each nut (12) removed from axle, recover retaining ring (15), the two half-bushes (16) and washer (17). Install these assemblies on new nuts (12).

(7) At each end of axle.

(a) If necessary apply a coat of product No. 059.

(b) Screw on nut (12) assembly by hand until nut slots engage with axle slots.

(c) Position hexagonal wrench C1-46079 into hexagonal nut (12) head so as to engage wrench balls in ball housings on nut.

(d) Fully tighten nut (12).

(e) Make certain that wheel rotates freely.

(f) Lower the aircraft onto its wheels.

(g) Torque nut (12) to 110.634 lbf ft (15 mdaN).

(h) Remove wrench C1-46079 and make certain that it is possible to install pin (13).

NOTE: If pin cannot be installed, partly engage hexagonal wrench into nut (12) head until wrench balls are flush with nut outer surface, and torque until locking slots are engaged. Reference lines engraved in the nuts must be aligned with those on plunger (14).

(i) Install pin (13).

E. Install

RB (1) After installation of nuts and bolts at hinge point
RB (Ref. IPC 32-21-10 Fig. 5 Section C) torque as
RB follows:

RB (a) Bolt P/N E420026.1000 (hollow bolt) and
RB associated nut P/N NSA5063-10 to a figure of
RB 44.25 ± 3.8 lbf ft (6 ± 0.5 mdaN) .

RB (b) Bolt P/N E420027.1000 (solid bolt) and associated
RB nut P/N NSA5064-10 to a figure of 14.75 ± 1.47
RB lbf ft (2 ± 0.2 mdaN).

RB (2) Position deflector.

RB (3) Connect deflector at its attach points on axle ends.

(a) Install an O-ring (9) on each nut (7).

(b) Install nuts (7) and tighten with wrench E930039000. Torque to 103.258 lbf ft (14 mdaN).

(c) Safety nuts (7) with spring clips (8).

RB (4) Connect deflector at its attachment on towing fitting.

B CAUTION: CRITICAL AIRCRAFT MAINTENANCE TASK.

B WHEN INSTALLING DEFLECTOR ENSURE THAT THE
B DEFLECTOR IS PROPERLY SAFETIED. FAILURE TO
B DO SO MAY RESULT IN COMPONENT DETACHMENT AND
B SUBSEQUENT AIRCRAFT DAMAGE.

(a) Install a shim (4) between deflector and towing fitting.

(b) Install pins (5) with a shim (4) under head.

(c) Install recessed washers (3).

(d) Coat nuts (2) with product No.059 and install. Torque nuts (2) to between 13.276 and 16.226 lbf ft (1.8 and 2.2 mdaN).

(e) Using tool kit D921627000 install lock washers (1).

RB (5) Lubricate deflector bearings with product No.051.

RB (6) Check for movement of nose landing gear water
RB deflector - no movement should occur. If movement
RB is apparent remove and reattach the assembly (Ref.
RB para. 2.).

F. Test

Not applicable.

G. Close-Up

(1) Remove jack.

(2) Remove jack adapter.

NOSE GEAR DEFLECTOR - INSPECTION/CHECK

1. General

   A. Check nose landing gear deflector for damage. Damage to lower blades may be reworked in accordance with RS K-32-40530.

NOSE GEAR DEFLECTOR - APPROVED REPAIRS

1. Replacement of loose deflector blade attachment rivets with bolts.

   A. Drill out the three tubular attachment rivets and remove the deflector blade.

   B. Clean out the attachment channel in the main housing with Genclene 807.

   C. If necessary apply 1 inch wide fibre-glass tape (Code N.T.P.A. 1114) to the lower face of the channel and trim to suit.

   D. Replace the deflector blade and secure with bolts NAS 6203-12D, nuts AN 3103, washers AN 960.C.6 and split pins SP 90 C6.

   NOTE : Assemble bolts with heads outboard.

SHOCK ABSORBER - SERVICING

1. General

R Shock absorber charging and topping-up are carried out after abnormal operation of shock absorber. These are temporary reconditioning procedures and can be carried out with the aircraft on wheels or on jacks.

R Filling and fluid level adjustment procedures for the various chambers are performed on a shock absorber on which minor servicing has been carried out (seal replacement for example). These operations are performed with the aircraft on jacks.

R NOTE : These filling and fluid level adjustment procedures are to be used in exceptional cases only when repair workshop does not have necessary reconditioning equipment such as press, gantry etc.

R 2. Shock Absorber Charging with Aircraft on Wheels
(Ref. Fig.301 and 302)
(Ref. Fig.303 and 304)

A. Equipment and Materials

DESCRIPTION	PART NO.
AIR HYDRAULIC Test Set	
Nitrogen Supply	
R Rule 500 mm (20 in.)	

B. Prepare

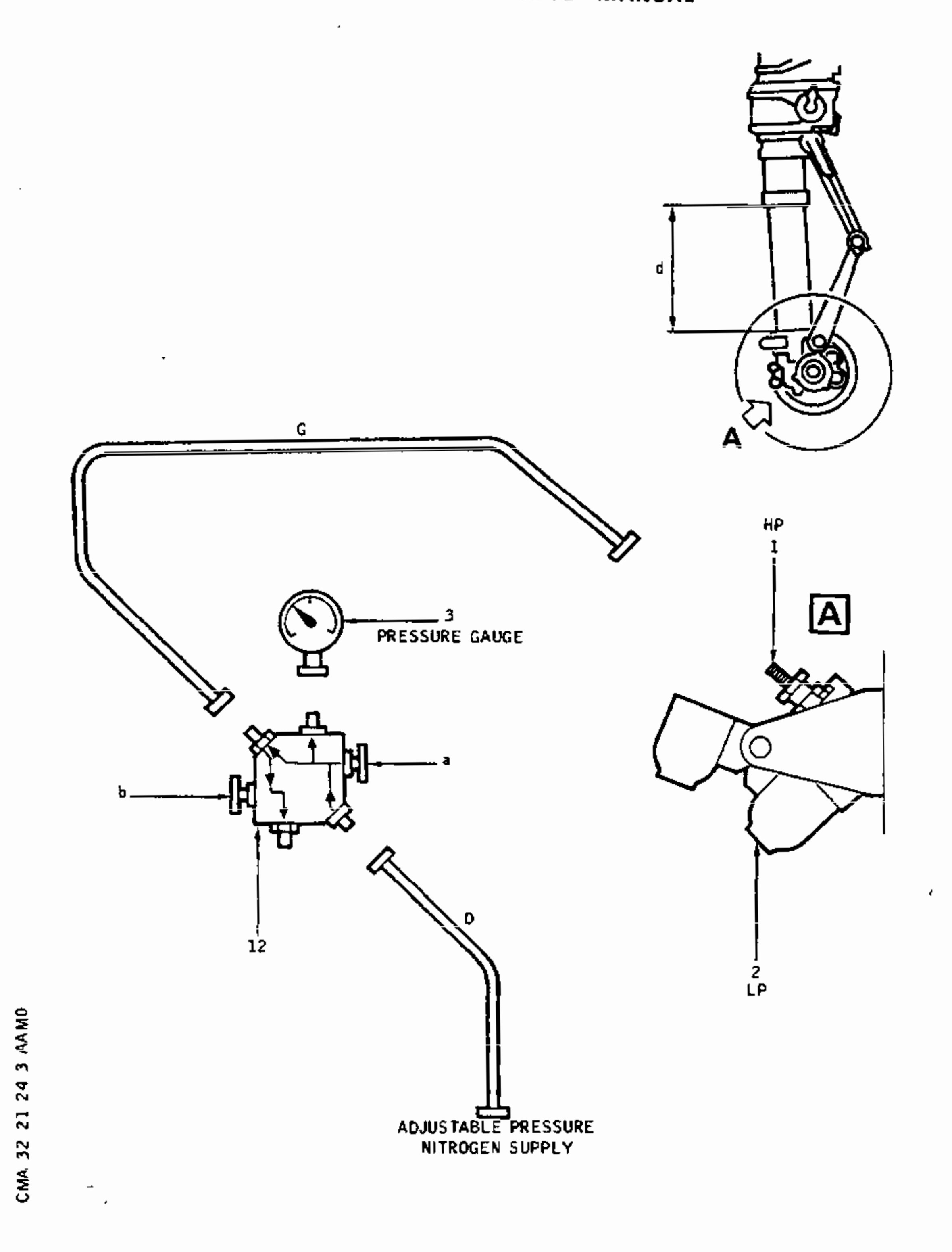
Make a charging system using components taken from AIR HYDRAULIC kit.

NOTE : Charging system component identification corresponds to identification given in AIR HYDRAULIC test set.

R C. Charge Shock Absorber

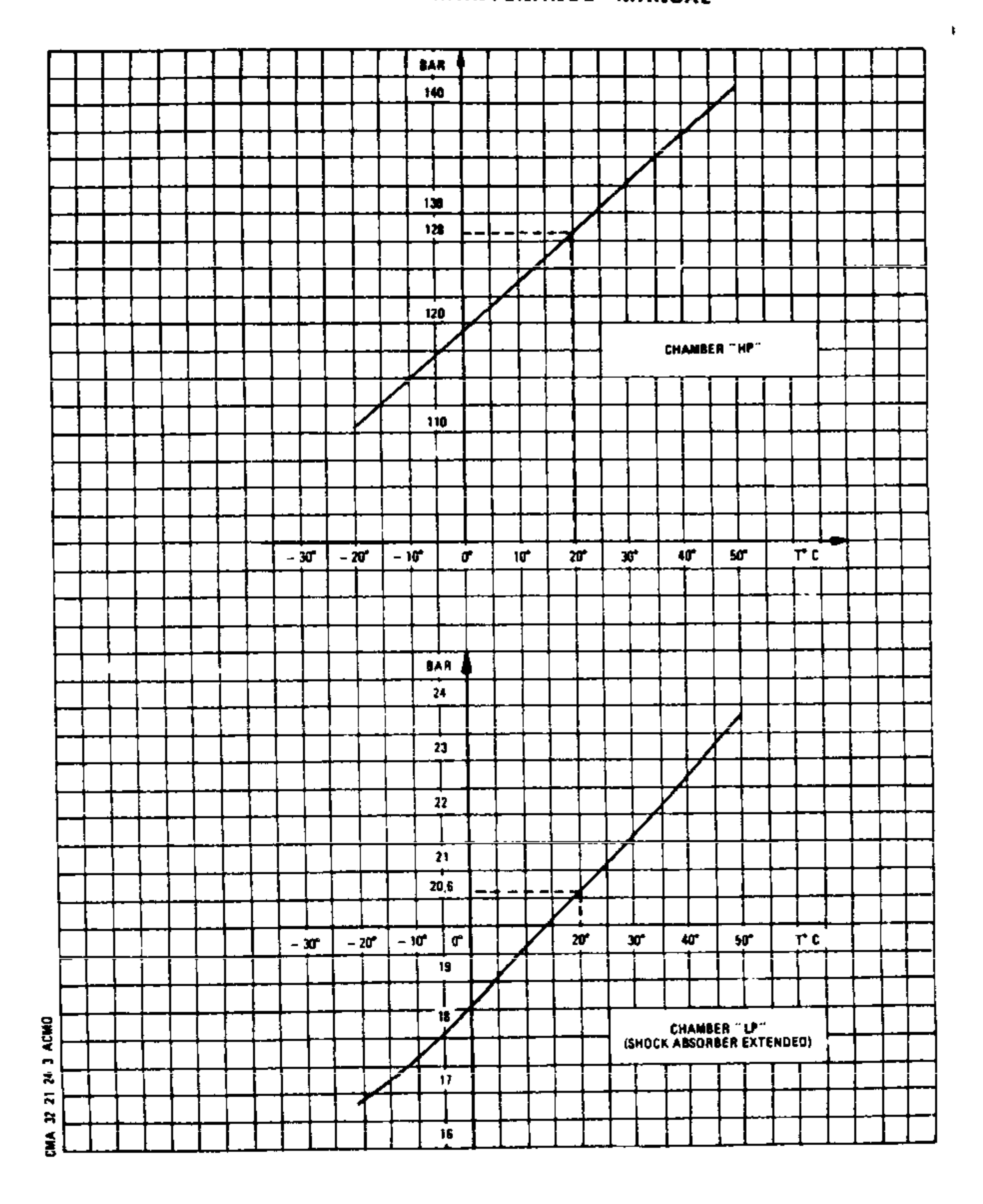
WARNING : SHOCK ABSORBER CHARGING SHALL BEGIN WITH HP CHAMBER.

R NOTE : LP valve (2) is located at valve support lower
R section.

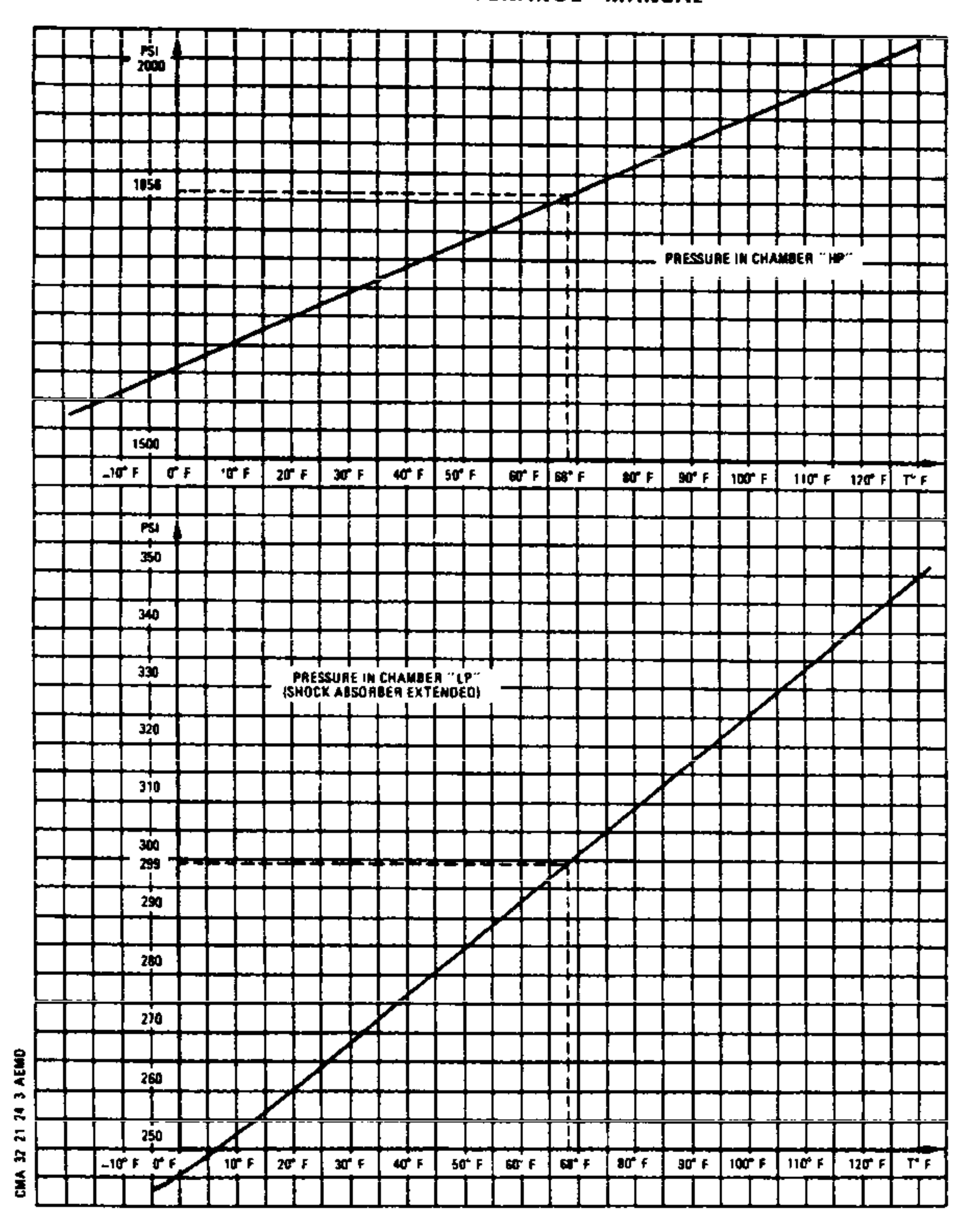


R

Shock Absorber Charging System
Figure 301

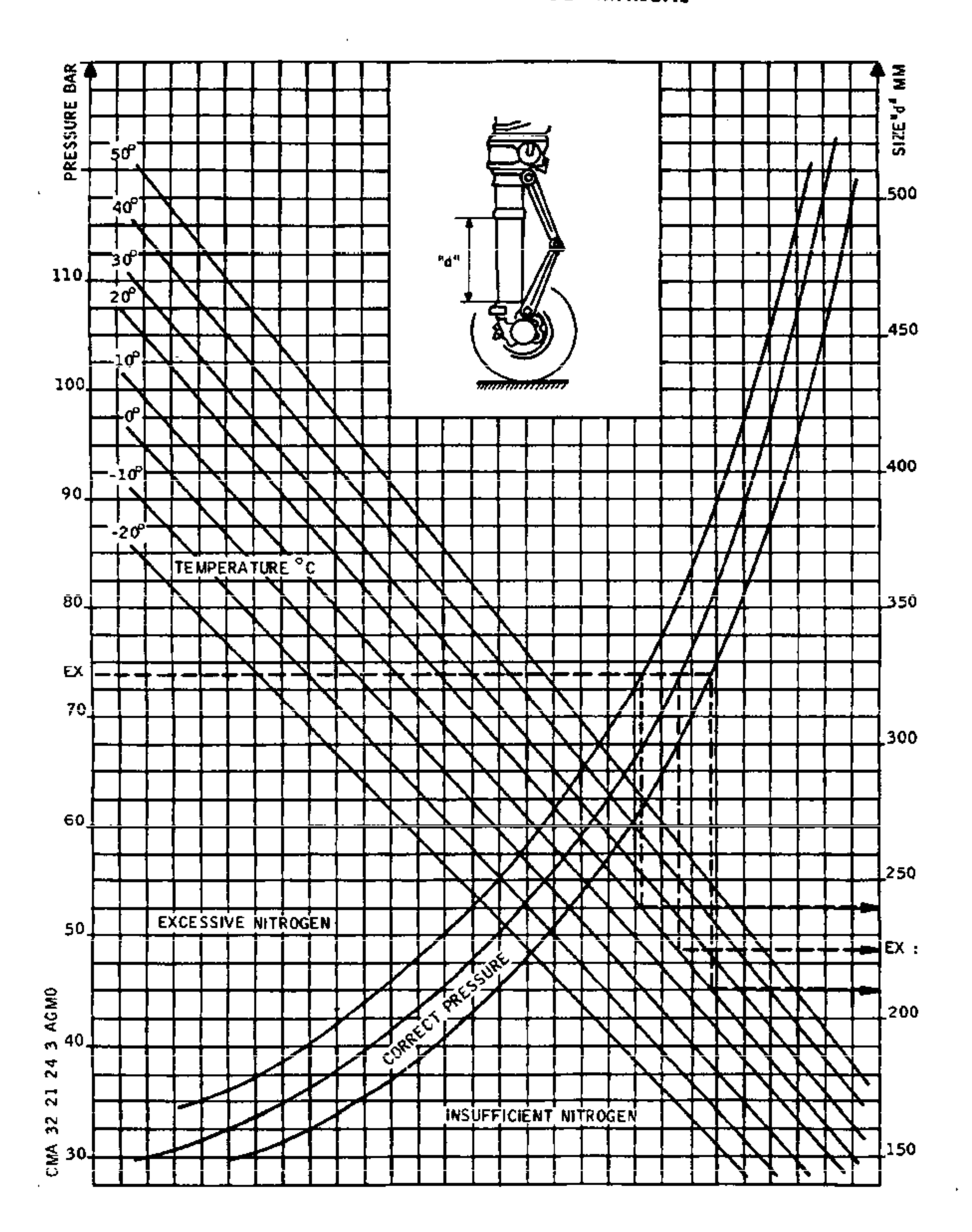


R HP and LP Charging Pressure in Bars
Figure 302



R

HP and LP Charging Pressure in p.s.i.
Figure 303



LP Charging Pressure with Aircraft on Wheels
Figure 304

R HP valve (1) is located at valve support upper
R section.

(1) HP chamber charging

(a) Place control valve (12) in following configuration :

- Valves (a) and (b) closed.
- Bleed valve plug removed.

R (b) Lift cover, remove valve cap and connect pipe (G) to valve (1).

(c) Unscrew HP valve (1) control nut by one turn and a half maximum.

WARNING : HOLD VALVE BODY DURING ALL VALVE MANOEUVRES.

(d) Adjust nitrogen supply pressure to the value read on pressure gauge (3).

NOTE : This operation is not necessary if HP chamber is to be fully charged.

(e) Open valve (a) of control valve (12) and adjust
R nitrogen supply pressure regulator.

R (f) Slowly release pressure in order to expand shock absorber progressively until HP chamber internal stop is reached.

(g) Continue pressurization slowly until the value determined by the graphs according to ambient temperature is reached.

NOTE : The first graph enables charging pressure (in bars) to be determined according to ambient temperature (in centigrade degrees).
The second graph enables charging pressure (in p.s.i.) to be determined according to ambient temperature (in FAHRENHEIT degrees).

(h) Wait for a few minutes to allow pressure to stabilize.

NOTE : If pressure is too high, close valve (a) and open valve (b) until pressure is

correct.

(i) Tighten valve (1) control nut.
R Torque nut to between 0.5 and 0.8 m.daN (44 and 71
R lbf. in.).

(j) Shut down nitrogen supply and open valve (b) of valve (12) to relieve pressure in the system.

(k) Install valve (1) cap.

(l) Fold back protective cover.

(2) LP chamber charging.

(a) Place control valve (12) in following configuration :

- Valves (a) and (b) closed.
- Bleed valve plug removed.

(b) Lift cover, remove valve cap and connect pipe (G) to LP valve (2).

(c) Unscrew valve (2) control nut by one turn and a half maximum.

(d) Adjust nitrogen supply pressure to the value read on pressure gauge (3).

NOTE : This operation is not necessary if LP chamber is to be fully charged.

(e) Open valve (a) of valve (12) and adjust nitrogen supply pressure regulator.

(f) Slowly and gradually apply pressure while monitoring pressure gauge (3).

NOTE : When pressure gauge (3) pointer stabilizes and shock absorber begins to extend, the pressure indicated balances the load on shock absorber.

(g) Record maximum pressure (P) (balancing pressure) when reached.

(h) Close valve (a).

(i) Determine dimension 'd' using the graph determining LP charging pressure with aircraft on

wheels.

(i1) On Y axis, note pressure recorded and from this point draw a horizontal line through nominal "correct pressure" curve.

(i2) From these intersections, draw three vertical lines down to the considered ambient temperature line and from these intersections draw three horizontal lines towards RH scale.
The values read on this scale indicate the permissible range of dimension 'd' to which shock absorber must be extended depending on the load applied.

(j) Open valve (a) again and continue to provide nitrogen supply until dimension 'd' previously determined is reached.

(k) Tighten valve (2) control nut.
R Torque nut to between 0.5 and 0.8 m.daN (44 and 71
R lbf. in.).

(l) Shut down nitrogen supply and open valve (b) of valve (12) to relieve pressure in the system.

(m) Disconnect charging system.

(n) Install valve (2) cap.

(o) Fold back protective cover.

R 3. Shock Absorber Charging with Aircraft on Jacks (Ref. Fig. 301, 302 and 303)

A. Equipment and Materials

DESCRIPTION	PART NO.
AIR HYDRAULIC Test Set	
Nitrogen Supply	

B. Prepare

(1) Make a charging system using components taken from AIR HYDRAULIC test set.

NOTE : Charging system component identification corresponds to identification given in AIR HYDRAULIC test set.

R C. Charge Shock Absorber

R WARNING : SHOCK ABSORBER CHARGING SHALL BEGIN WITH HP CHAMBER.

R NOTE : LP valve (2) is located at valve support lower
R section.
R HP valve (1) is located at valve support upper
R section.

(1) HP chamber charging

(a) Place control valve (12) in following configuration :

- Valves (a) and (b) closed.
- Bleed valve plug removed.

R (b) Lift cover, remove valve cap and connect pipe (G) to valve (1).

(c) Adjust nitrogen supply pressure to the value determined by the graphs according to ambient
R temperature.

(d) Open nitrogen supply valve.

(e) Unscrew valve (1) control nut by one turn and a half maximum.

WARNING : HOLD VALVE BODY DURING ALL VALVE MANOEUVRES.

(f) Slowly open valve (a) of control valve (12) and monitor variations in pressure on pressure gauge.

(g) Wait for a few minutes to allow pressure to stabilize.

NOTE : If final pressure is too high, close valve (a) and slowly open valve (b) until pressure is correct.
If pressure is too low, adjust nitrogen supply pressure regulator.

(h) Tighten valve (1) control nut.
R Torque nut to between 0.8 and 0.5 m.daN (44 and 71
R lbf. in.).

(i) Shut down nitrogen supply and open valve (b) of control valve (12) to relieve pressure in the system.

(j) Disconnect charging system.

(k) Install valve (1) cap.

(l) Fold back protective cover.

(2) LP chamber charging.

(a) Place control valve (12) in following configuration :

- Valves (a) and (b) closed.
- Bleed valve plug removed.

(b) Lift cover, remove valve cap and connect pipe (G) to valve (2).

(c) Adjust nitrogen supply pressure to the value determined by the graphs according to ambient temperature.

(d) Open nitrogen supply valve.

(e) Unscrew valve (2) control nut by one turn and a half maximum.

WARNING : HOLD VALVE BODY DURING ALL VALVE CONTROL NUT MANOEUVRES.

(f) Open valve (a) of control valve (12) very slowly and monitor variations in pressure on pressure gauge.

(g) Wait for a few minutes to allow pressure to stabilize.

NOTE : If final pressure is too high, close valve (a) and slowly open valve (b) until pressure is correct.
If pressure is too low, adjust nitrogen supply pressure regulator.

(h) Tighten valve (2) control nut.
R Torque nut to between 0.5 and 0.8 m.daN (44 and 71 lbf. in.).

(i) Shut down nitrogen supply and open valve (b) of control valve (12) to relieve pressure in the system.

(j) Disconnect charging system.

(k) Install valve (2) cap.

(l) Fold back protective cover.

4. Topping-Up with Aircraft on Wheels
(Ref. Fig. 305)

A. Equipment and Materials

DESCRIPTION	PART NO.
AIR HYDRAULIC Test Set	
Set of Concentric Tube Wrenches and Extension Tube	D46136
Level Gauge Piece	C46602
R Rule 500 mm (20 in.)	
Hydraulic Fluid (Ref. 20-30-00, No.012)	

B. Prepare

WARNING : BEFORE ALL TOPPING UP OPERATIONS MAKE CERTAIN THAT HP CHAMBER CHARGING PRESSURE IS CORRECT.

NOTE : The LP chamber has been depressurized during inspection/check.
R The shock absorber shall be in "compressed" position.

(1) Make a filling system with components taken from AIR HYDRAULIC set.

NOTE : Filling system component identification corresponds to identification given in AIR HYDRAULIC set.

R (2) Remove cover (17) at shock absorber upper section.

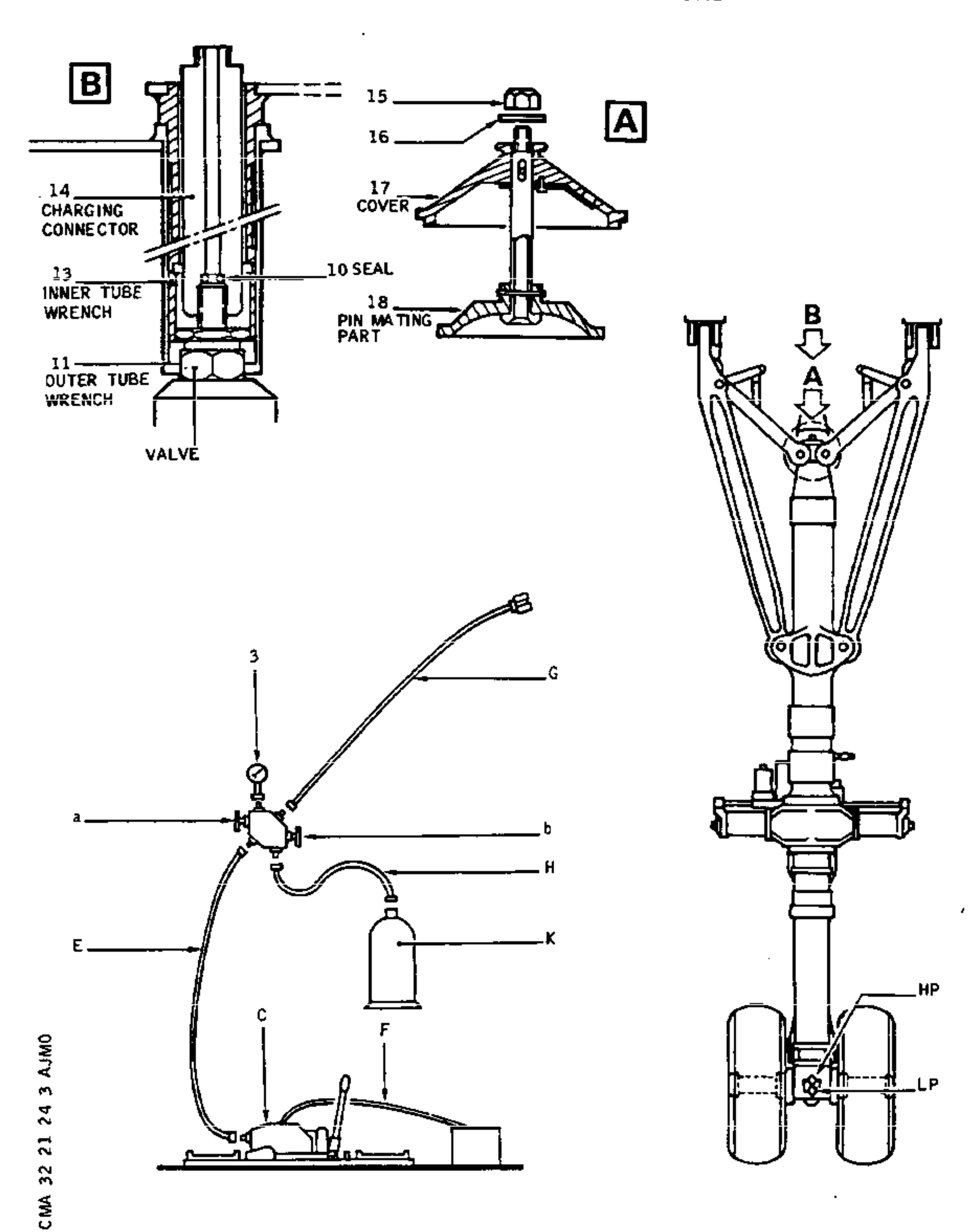
(a) Cut and remove lockwire and remove nut (15).

(b) Retain washer (16) for reinstallation.

(c) Turn pin through 90° then remove pin and mating part (18) assembly.

WARNING : CARRY OUT THIS OPERATION VERY SLOWLY IN ORDER TO ALLOW POSSIBLE NITROGEN PRESSURE TO DROP.

(3) Fully bleed filling system before connecting it to



Topping-Up and Filling System
Figure 305

R shock absorber upper valve.

R WARNING : CHOCK MAIN LANDING GEAR WHEELS.

C. Topping-Up

R (1) Remove valve cap.

(2) Install tool D46136.

(a) Check presence of seal (10) and screw filling
R and charging connector (14) in fully.

(b) Insert inner tube wrench (13) to operate valve.

(c) Insert outer wrench (11) to hold valve body.

WARNING : HOLD VALVE BODY WITH OUTER TUBE WRENCH
R DURING ALL FILLING OPERATIONS.

(3) Place control valve (12) in following configuration :

- Valves (a) and (b) closed.

(4) Connect filling pipe (G) to connector (14).

R (5) Unscrew filling valve control nut very slowly by one turn and a half maximum.

WARNING : THIS OPERATION REQUIRES SPECIAL CARE AS IT ENTAILS SLIGHT VERTICAL DISPLACEMENT OF THE AIRCRAFT. PROCEED CAREFULLY, TO PREVENT THIS DISPLACEMENT TAKING PLACE SUDDENLY.

(6) Record pressure read on pressure gauge then screw in
R valve control nut.

(7) Make certain that filling valve is closed ; open then close valve (b) of control valve (12) in order to relieve pressure in the system. Open valve (a).

R (8) Increase pressure using hand pump until shock absorber
R pressure previously recorded is reached.

(9) Maintain this pressure and re-open filling valve very slowly.

R (10) Use hand pump to extend shock absorber fully (maximum dimension 'd' = 625 mm (24.6 in.) corresponding to
R full shock absorber travel).

(11) Close valve (a) of control valve (12).

NOTE : Take care that suction pipe of hand pump remains in contact with fluid during all of filling operation.

(12) Install shim C46602 on sliding tube.

(13) Slowly allow pressure to drop by adjusting valve (b) in order to compress shock absorber gradually until it comes into contact with shim C46602. Allow excess fluid to drain off.

(14) If necessary, repeat extension-compression operation in order to bleed shock absorber thoroughly.

NOTE : Allow fluid to rest before repeating the operation.

(15) With shock absorber in "compressed" position, tighten valve control nut using inner tube wrench (13) while holding valve body with outer tube wrench (11).
R Torque nut to between 0.5 and 0.8 m.daN (44 and 71
R lbf.in).

(16) Disconnect filling system and remove tool D46136.

(17) Install valve cap.

D. Close-Up

(1) Install cover (17) blanking off top of shock absorber leg.

(a) Install pin/mating part (18) assembly.

(b) Install washer (16).

(c) Tighten nut (15) and wirelock.

(2) Charge LP nitrogen chamber (Ref. paragraph 2, shock absorber charging with aircraft on wheels).

(3) Remove shim C46602.

5. Topping-Up with Aircraft on Jacks
(Ref. Fig. 305)

A. Equipment and Materials

DESCRIPTION	PART NO.
AIR HYDRAULIC Test Set	
R Jack-Shock Absorber Compression	1761/1
Set of Concentric Tube Wrenches and Extension Tube	D46136
Level Gauge Piece	C46602
R Rule 500 mm (20 in.)	
Hydraulic Fluid (Ref. 20-30-00, No.012)	

B. Prepare

WARNING : BEFORE ALL TOPPING UP OPERATIONS, MAKE CERTAIN THAT HP CHAMBER CHARGING PRESSURE IS CORRECT.

NOTE : The LP chamber has been depressurized during inspection/check.
R The shock absorber shall be in "compressed" position.

(1) Make a filling system with components taken from AIR HYDRAULIC test set.

NOTE : Filling system component identification corres-
R ponds to identification given in AIR HYDRAULIC set.

(2) Remove cover (17) at top of shock absorber.

(a) Cut and remove lockwire, remove nut (15).

(b) Retain washer (16) for reinstallation.

(c) Turn pin through 90° then remove pin and mating part (18) assembly.

WARNING : CARRY OUT THIS OPERATION VERY SLOWLY IN ORDER TO ALLOW POSSIBLE NITROGEN PRESSURE TO DROP.

(3) Fully bleed filling system before connecting it to
R shock absorber upper valve.

C. Topping-Up

R (1) Install shim C46602 on sliding tube of shock absorber.

R (2) Remove upper valve cap.

(3) Install tool D46136.

(a) Check presence of seal (10) and screw filling
R and charging connector (14) in fully.

R (b) Insert inner tube wrench (13) to operate valve.

(c) Insert outer wrench (11) to hold valve body.

WARNING : HOLD VALVE BODY WITH OUTER TUBE WRENCH
R DURING ALL FILLING OPERATIONS.

(4) Before connecting charging system pipe to connector (14).

(a) Slightly unscrew valve control nut in order to relieve possible nitrogen pressure.

(b) Unscrew control nut by one turn and a half maximum.

(5) Place control valve (12) in following configuration :

- Valve (a) closed.
- Valve (b) open.

R (6) Using tool 1761/1 compress shock absorber until it reaches its stop on shim C46602. Allow excess fluid to drain off.

(7) Place control valve (12) in following configuration :

- Valve (a) open.
- Valve (b) closed.

R (8) Using hand pump, inject fluid in order to extend shock absorber gradually.

NOTE : Make certain that suction pipe of hand pump remains in contact with fluid.

(9) Place control valve (12) in following configuration :

- Valve (a) closed.
- Valve (b) open.

(10) Compress shock absorber again to achieve contact with shim C46602.

(11) If necessary, repeat extension-compression operation in order to bleed shock absorber correctly.

NOTE : Allow fluid to rest before repeating this operation.

(12) With shock absorber in "compressed" position.

(a) Tighten valve control nut using inner tube wrench (13) while holding valve body with outer wrench (11).
R Torque nut to between 0.5 and 0.8 m.daN (44 and 71
R lbf.in.).

(b) Remove tool D46136.

(c) Disconnect filling system.

(d) Install valve cap.

(13) Gradually extend shock absorber by means of tool 1761/1.

(14) Remove shim C46602.

D. Close-Up

(1) Install cover (17) blanking off top of shock absorber leg.

(a) Install pin/mating part (18) assembly.

(b) Install washer (16).

(c) Tighten nut (15) and wirelock.

(2) Charge LP nitrogen chamber (Ref. "Shock absorber charging with aircraft on jacks", paragraph 3).

6. Shock Absorber Filling and Fluid Level Adjustment with Aircraft on Jacks
RB (Ref. Fig. 301, 305 and 305A)

A. Equipment and Materials

DESCRIPTION	PART NO.
AIR HYDRAULIC Test Set	-
Set of Concentric Tube Wrenches and Extension Tube	D46136
RB Collar	C46602
RB Jack-Shock Absorber Compression	-
Rule 500 mm (20 in)	-
Hydraulic Fluid (Ref. 20-30-00. Product No. 012)	-

B. Prepare

RB (1) Make a charging system rig and an oil filling system rig.

NOTE: Filling and charging system component identification corresponds to identification given in AIR HYDRAULIC set.

(2) Remove cover (17) at top of shock absorber.

(a) Cut and remove lockwire, remove nut (15).

(b) Retain washer (16).

(c) Turn pin through 90° then remove pin and mating part (18) assembly.

RB (3) Before connecting oil filling system rig to shock absorber.

RB (a) Take care to bleed oil filling system rig thoroughly.

RB (b) Fully open HP and LP chamber charging valve (one and a half turns maximum).

WARNING: HOLD VALVE BODY WITH OUTER TUBE WRENCH DURING ALL CHARGING OPERATIONS.

(c) Remove shock absorber filling valve cap.

(d) Install tool D46136.

(d1) Check presence of seal (10) and screw charging connector (14) in fully.

(d2) Insert inner tube wrench (13) to operate valve.

(d3) Insert outer tube wrench (11) to hold valve body.

(e) Slightly unscrew filling valve control nut in order to relieve possible nitrogen pressure.

(f) Unscrew this valve control nut by one and a half turns maximum.

WARNING: HOLD VALVE BODY WITH OUTER TUBE WRENCH DURING ALL FILLING OPERATIONS.

C. Shock Absorber Filling and Fluid Level Adjustment

(1) HP chamber level.

RB (a) Connect oil filling system rig to HP valve (1).

RB (b) Using hand pump, fill HP chamber with oil (Product No.012).

RB (c) Connect oil filling system rig to fill valve.

RB (d) Compress shock absorber fully using bottle jack.

RB (e) Allow leg to extend whilst simultaneously filling
RB leg using a rig hand pump.

RB (f) Allow excess fluid to drain via HP valve (bottom).

RB NOTE: HP (1) and LP (2) valves are open.

RB (2) Charge HP chamber (Ref. Page 309 para.3.c.(1) and Page 304 Fig. 303).

RB (3) LP chamber level.

RB (a) Fully compress shock absorber using bottle jack.

NOTE: During this operation, allow excess oil to drain through shock absorber upper filling valve.

RB (b) Close fill valve.

RB (c) Connect oil filling system rig to LP valve (2).

(d) Using hand pump and applying low pressure, extend shock absorber by about 1.18 in (30 mm).

NOTE: Allow fluid to rest.

(e) Compress shock absorber again allowing excess fluid to drain off via LP charging valve (2).

(4) Shock absorber filling.

RB (a) Connect oil filling system rig to fill valve.

RB (b) Open fill valve.

RB (c) Using hand pump, fully inject oil (Product No.012)
RB and allow shock absorber to fully extend.

RB (d) Fully compress shock absorber using bottle jack.

(e) Repeat operation (c) and (d) in order to drive air out of fluid chamber.

RB (f) With shock absorber extended, install collar C46602.

RB (g) Compress shock absorber to achieve contact with
RB collar.

(h) Close fill valve immediately. Torque to between 44 and 71 lbf in (0.5 and 0.8 mdaN).

(i) Allow leg to fully extend and remove bottle jack.

(5) LP chamber charging (Ref. paragraph 3.).

(a) Re-check LP chamber pressure against leg extension when aircraft on wheels.

RB D. Close-Up

RB (1) Remove collar C46602.

(2) Remove tool D46136.

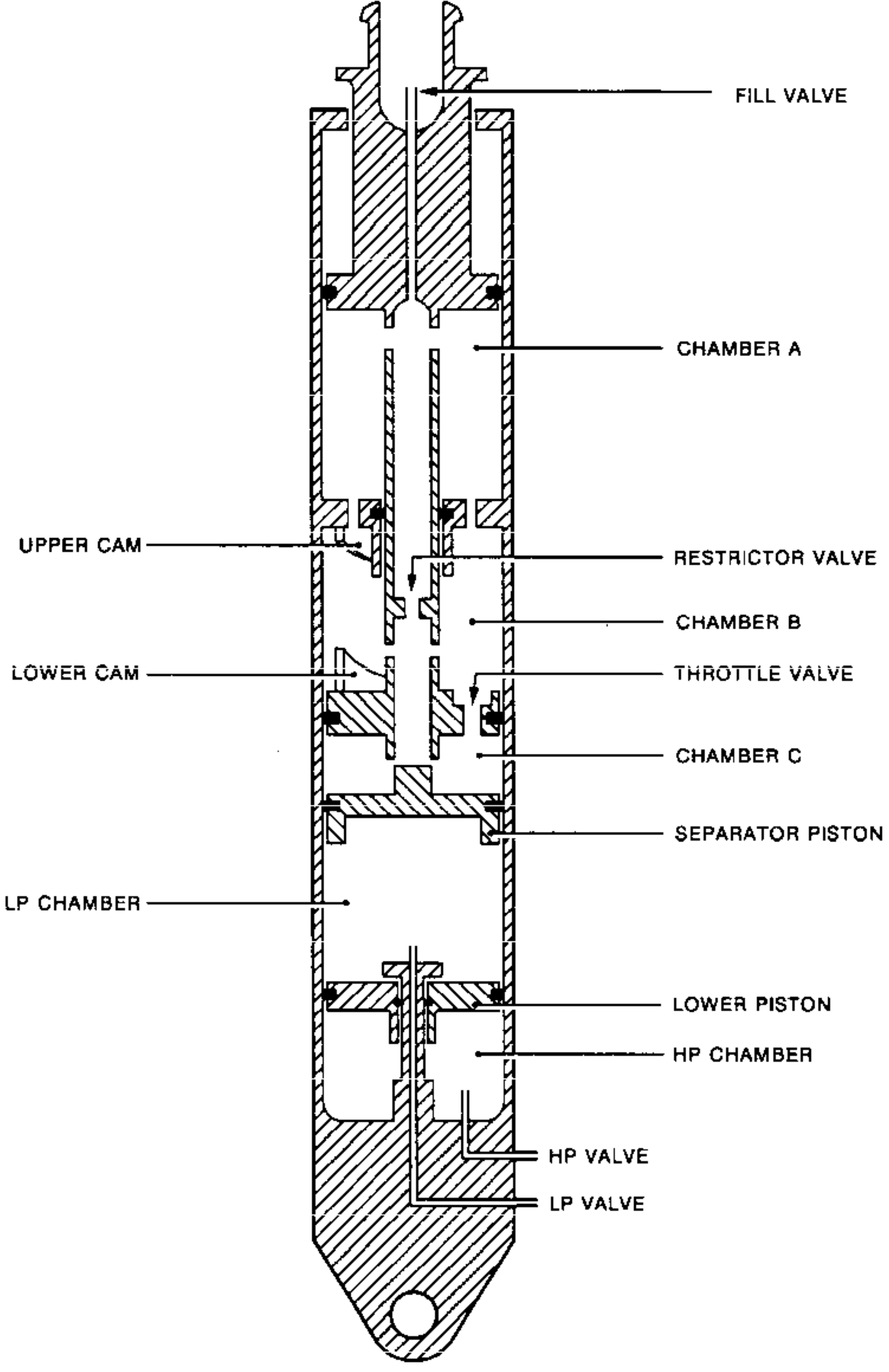
RB (3) Install fill valve cap.

(4) Install cover (17) at top of shock absorber.

(a) Install pin/mating part (18) assembly.

(b) Install washer (16).

(c) Tighten nut (15) and wirelock.



CMB 32 21 24 3 AJMM 00

RB

Shock Absorber Sectional Diagram
Figure 305A

7. Lubrication of Axle Bearings

A. Equipment and Materials.

DESCRIPTION	PART NO.
Nose and Main Gear Wheel Change Jack (Inflated Types)	07-20-0001
Jack Adapter	C22341-1
Maintaining Wrench	C46599
Spacer	C47173
Threaded Bush	C47174
**ON A/C ALL	
Pin Wrench	C47321 or 2-32-1521-1BA, 2-32-1523-1BA (B B B)
Extractor	C47723
Extractor-axle bearing outer race (Use only if bearing removal required) (RB RB)	EWP3-9456
Lockwire - Dia 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Wheel Chocks	
Common Grease (Ref. 20-30-00, No. 051)	
Cleaning (Ref. 20-30-00, No. 459)	

B. Prepare

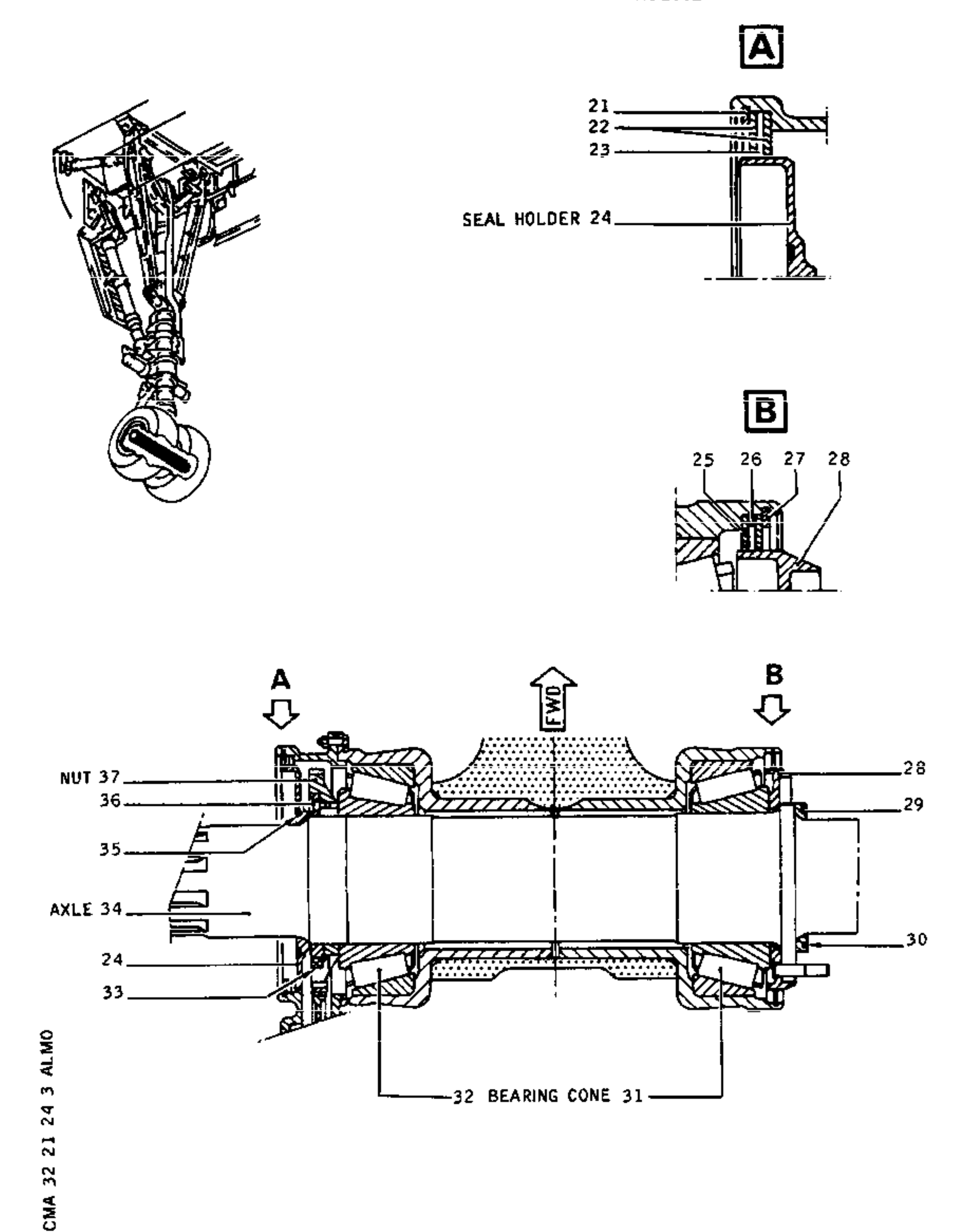
(1) Chock main gear wheels

(2) Remove nose gear wheels (Ref. 12-37-00)

(3) Remove nose gear brake unit (Ref. 32-42-21, Removal/ Installation) without disconnecting supply lines to avoid bleeding brake unit after reinstallation.

C. Procedure (Ref. Fig. 306)

(1) Remove bearing cone at tachometer generator side



Lubrication of Axle Bearings
Figure 306

(a) Remove seal holder (24)

(b) Remove retainer ring (21)

(c) Remove washers (22) and felt washer (23)

(d) Cut and remove lockwire and remove screws (36) then extract lock ring (33) using extractor C47723

(e) Remove nut (37) using tools C47321, C47173 and C47174.

(f) Remove bearing cone (32)

(2) Remove bearing cone at brake unit side.

(a) Remove retainer ring (27)

(b) Remove washers (25) and felt washer (26)

(c) Extract axle (34), washer (28) and retain washer (29) for reinstallation.

(d) Remove bearing cone (31) if it did not remain on axle when axle was extracted.

(3) Note positions of bearing cones to achieve similar operating conditions after reinstallation.

D. Preparation of Components.

(1) Clean axle, bearing cones and cups with product No. 469

(2) Make certain that components have not overheated (blue heat marks).

RB NOTE : If bearing removal is required use extractor
RB EWP3-9456 to facilitate outer race removal.

(3) Make certain that there are no traces of corrosion on bearing cones.

(4) Check that cups have not turned and are still correctly installed.

(5) Check washer (29) and (24) seals (30) and (35) for correct condition.

(6) Lubricate axle, bearing cones and cups with product No. 051.
Make certain that grease penetrates between taper rollers.

E. Install.

RB CAUTION : AXLES P/N C51315-25R1 POSSESS UNDERSIZE THREADS.
RB ASSEMBLE WITH MATCHING COMPONENTS P/N C61808R1
RB (GEAR) AND 00-200-189R1 (LOCK WASHER).

RB (AXLES WITH UNDERSIZE THREADS ARE IDENTIFIED WITH
RB A 1" WIDE PAINTED BLUE BAND).

(1) Install bearing cone at brake unit side.

(a) Install bearing cone (31) in its cup.

(b) Install washer (28) fitted with its screws on axle.

(c) Install axle in its bore and push fully home.

(2) Install bearing cone at tachometer generator side.

(a) Install bearing cone (32) in its cup.

(b) Install nut (37) and screw fully home making certain that tachometer generator pinions engage correctly.

(c) Secure axle using maintaining wrench C46599 and tighten nut (37) using tools C47321, C47173 and C47174.

- Torque nut (37) to 50 m.daN (368 lbf. ft.) to correctly position components then back off.
- Tighten nut (37) and torque to 15 m.daN (110 lbf. ft.).
- Back off nut (37) between 1/10 and 1/15 of a turn.

Resulting end play is between 0.1 and 0.25 mm (0.004 and 0.01 in.).

(d) Install lock ring (33).

(e) Install screws (36) and safety with lockwire.

(3) At tachometer generator, position seal holder (24) on axle and install washers (22) with a new felt washer (23) in between.

(4) Install retainer ring (21).

(5) At brake unit, install washers (25) with a new felt washer in between.

(6) Install retainer ring (27).

(7) Install washer (29) on axle.

F. Close-Up.

(1) Install brake unit (Ref. 32-42-21, Removal/ Installation).

(2) Install wheels (Ref. 12-37-00).

(3) Lower aircraft onto its wheels.

SHOCK ABSORBER - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The shock absorber is of the oleo-pneumatic type. It is mounted in the gear leg by means of a locking dog mechanism. The shock absorber includes two dry nitrogen chambers; one HP and one LP chamber. The shock absorber serves for steering of the nose gear wheels by means of the torque links.

2. Shock Absorber

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183 621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001

	DESCRIPTION	PART NO.
	Pyramid Adapter Lifting, LH	D924008000
	Pyramid Adapter Lifting, RH	D924008001
	Safety Stay	
	Electrical Ground Power Unit	
	Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
	Access Platform 3.220 m (10 ft. 7 in.)	
	Jack - Shock Absorber Compression	1761/1
	Blanking Caps/Plugs	
	Unlocking Device	C46596
	Guide Tool	C1-46389
	Depth Gauge	
**ON A/C ALL		
B B	Open End Wrench	C46868 or 2-32-1515-1BA
**ON A/C ALL		
	Safety Sleeve - Nose Landing Gear Doors	E925002000
	Circuit Breaker Safety Clips	
**ON A/C ALL		
	Common Greases (Ref. 20-30-00, No.051)	
	Special Products (Ref. 20-30-00, No.108)	
	Sealing Compound (Ref. 20-30-00, No.361)	
	Sealing Compound (Ref. 20-30-00, No.362)	
	Cleaning Fluid (Ref. 20-30-00, No.468)	

DESCRIPTION	PART NO.
Lockwire Dia 1 mm (0.041 in.) (Corrosion Resistant Steel)	
Lockwire Dia 0.6 mm (0.024 in.) (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up the aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Make certain that the visor is not uplocked.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Connect hydraulic ground power unit to Green hydraulic system.

(8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(10) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Display a warning notice in flight compartment.

(14) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER		MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G	1	A 6
UC SELECTOR RAISE CONT		G	2	A 7
UC LOWER DOORS OPEN SUP		G	3	A 8
UC SELECTOR LOWER CONT		G	4	A 9

(15) Install safety sleeves and collars.

(16) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(17) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(18) Disconnect hydraulic lines from nose gear telescopic drag strut and from actuating cylinder.
Connect these components to hydraulic ground power unit hand pump.

(19) Blank off hydraulic lines.

(20) Remove nose gear telescopic drag strut safety key (C22127).

(21) De-energize the aircraft electrical network.

C. Remove (Ref. Fig.401 and 402)

(1) Disconnect electrical connectors of both tachometer generators.

(2) Disconnect wiring and hydraulic lines on torque links.

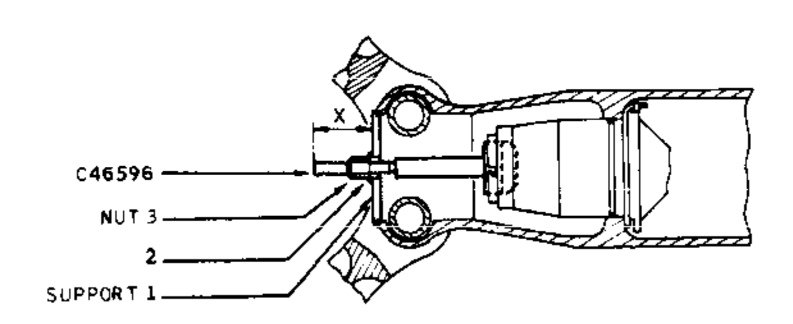
(3) Remove static discharger.

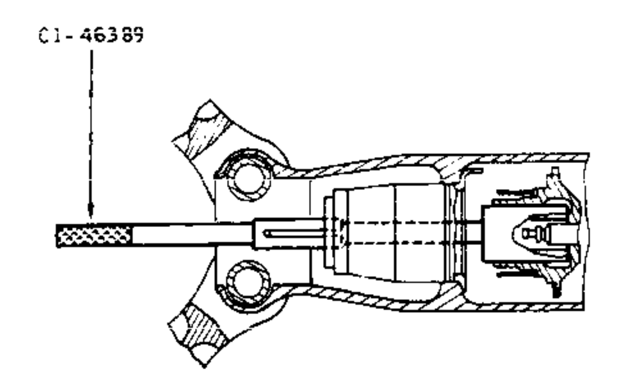
(4) Slowly release pressure from LP and HP chambers and maintain a pressure of 5 bars (73 psi).

NOTE : This pressure enables increase in slide rod rigidity, facilitating its removal.

(5) Uncouple torque links.

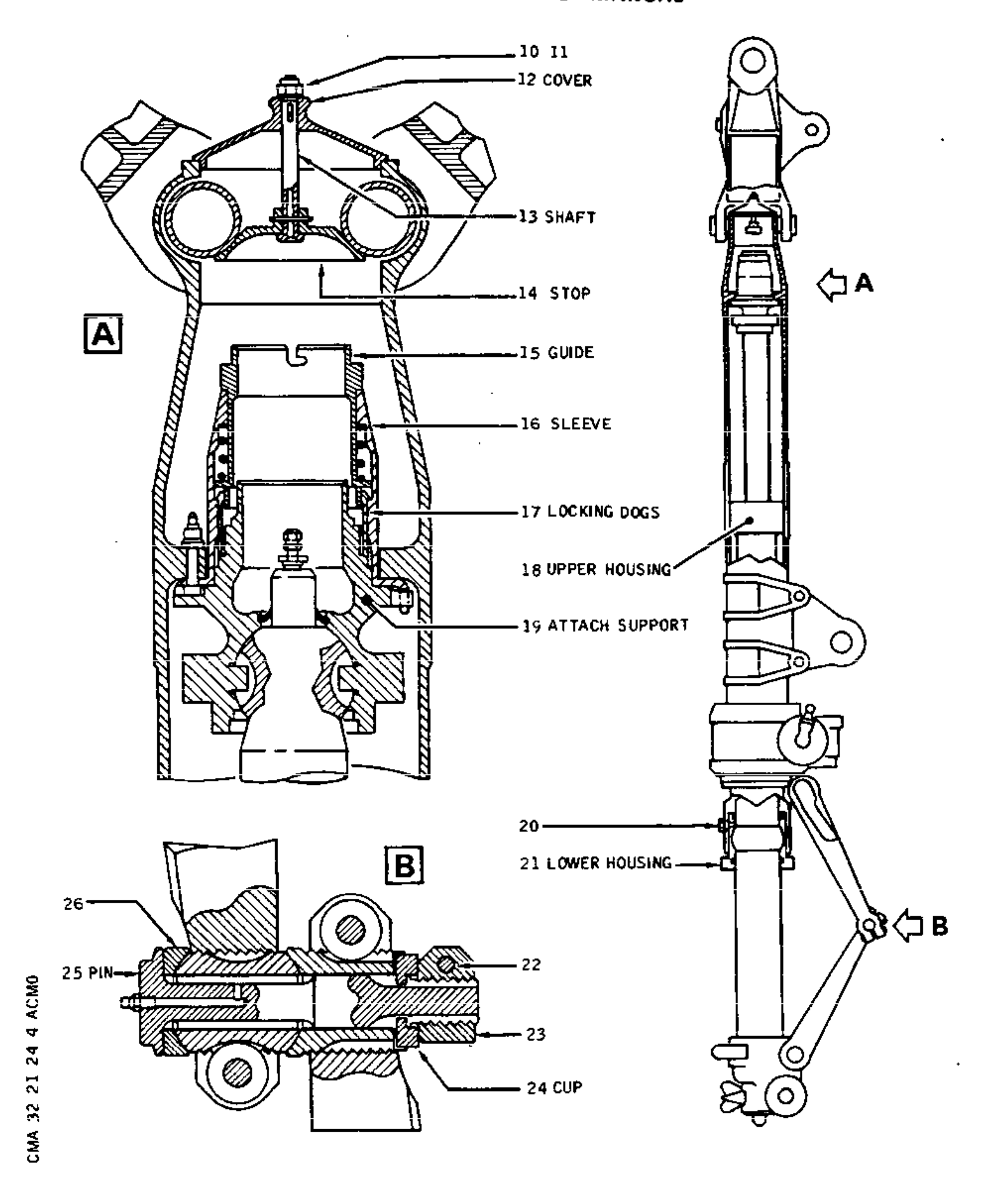
(a) Remove bolt (22).





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Shock Absorber Installation Tools
Figure 401



Shock Absorber
Figure 402

(b) Remove nut (23) and remove cup (24).

(c) Hold torque links and remove pin (25). Retain washer (26) for reinstallation.

(6) Cut and remove lockwire and remove washer head screws (20) together with seals.

(7) Unlock upper clamp of sliding section.

(a) Cut and remove lockwire and remove nut (10).

(b) Retain washer (11) for reinstallation.

(c) Remove cover (12).

(d) Rotate shaft (13) through an angle of 90°, and remove shaft (13), stop (14) and cover (12).

(e) Install tool C46596 and insert it in gear leg upper aperture.
Insert cone lugs in guide (15) notches.
Install support (1) and washer (2) on gear leg upper section.
Tighten knurled nut (3) by hand and bring into contact with washer (2).

(f) Continue tightening lightly by hand, until cone lugs are well positioned in guide (15) notches.

(g) Measure, with a depth gauge, the dimension X, between threaded rod-end and support (1) outer face.
Record the dimension.

(h) Clear wheel area and tighten nut (3).

(i) If necessary, press on wheels to aid lowering of sliding section.

(8) Lift aircraft about 300 mm (12 in.).
Make certain that during this operation, the sliding section lowers normally.

(9) Operate hand pump in order to begin raising leg.
At same time extract sliding section using wheels as support.

(10) Continue lifting gear and extracting sliding section.

(11) Maintain leg and sliding section in same axis.

(12) Assist lower housing (21) extraction, when upper housing (18) comes into contact.
Make certain, at end of operation, that locking dogs (17) do not knock against inside of leg lower section.

(13) Remove tool C46596.

D. Preparation of Replacement Component

(1) On removed shock absorber :

(a) Remove wheels (Ref. 12-37-00, Removal/Installation).

(b) Remove brake unit (Ref. 32-42-21, Removal/Installation).

(2) On replacement shock absorber

NOTE : Preserve storage pressure in LP and HP chambers. This pressure enables increase in slide rod rigidity facilitating its installation.

(a) Install brake unit (Ref. 32-42-21, Removal/Installation).

(b) Install wheels (Ref. 12-37-00, Removal/Installation).

(3) On nose gear leg

(a) Clean inside of landing gear leg with Product No.468.

(b) Lightly lubricate the housing which is to receive lower housing (21) with Product No.051.

E. Install

(1) With nose landing gear leg inclined, install sliding section in nose landing gear leg.

(a) Using hand pump, progressively manoeuvre leg to enable sliding section to be inserted.

(b) Install tool C1-46389, through leg upper section, and insert it in attach support (19) bore.

(c) Position jack 1761/1 under the sliding section.

(d) Using jack 1761/1 continue sliding rod insertion

so that attach support (19) bores are aligned with sleeve (16) lugs.

(e) Guide attach support (19) with tool, to ensure correct insertion of bores in sleeve (16) lugs.

(f) With jack 1761/1, fully engage sliding section until dogs (17) lock.

(g) Remove jack 1761/1.

(h) Remove tool C1-46389.

(2) Install tool C46596.

(a) Tighten nut (3) until cone lugs are fully positioned in guide (15) notches.

(b) Measure with depth gauge the X dimension between threaded rod-end and support (1) external face.

(c) This dimension shall be identical to the one noted during removal.

NOTE : This operation enables correct locking of sliding section in gear leg.

(3) Remove tool C46596.

(4) Insert lower housing (21) into gear leg.

Bring lubricators parallel to steering cylinders and move lower section so that washer head screw (20) holes are aligned.

(5) Slightly coat screw (20) threads with Product No.108.

(6) Install screws (20) with seals. Wirelock screws (20) with 1 mm (0.041 in.) corrosion resistant steel lockwire.

(7) Check that sliding section travel is 625 ± 5 mm (24.6 ± 0.197 in.).

(8) With hand pump, mechanically lock drag strut.

(9) Install nose gear drag strut safety key C22127.

(10) Disconnect hand pump.

(11) Remove blanking plugs. Connect aircraft lines to the

two actuating cylinders and a drag strut.

(12) Install washer (26). Couple torque links with pin (25).

(a) Install cup (24) and install nut (23).

(b) Screw and torque tighten nut (23) to 10 mdaN (72 lbf ft).

(c) Loosen nut (23), then tighten to obtain assembly rotation without play.

R (d) Position locking bolt (22). Screw and torque tighten its nut
R between 1.7 and 2.0 mdaN (12.2 and 14.4 lbf ft) and install cotter
R pin.

(13) Insert stop (14) and cover (12) assembly into gear leg upper aperture, and rotate assembly through an angle of 90°.

(a) Install washer (11).

(b) Tighten nut (10), wirelock with corrosion resistant steel lockwire, Dia. 0.6 mm (0.024 in).

(14) Connect electrical connectors to tachometer generators.

(15) Connect hydraulic lines to brake unit.

(16) Secure wiring and hydraulic lines.

(17) Carry out front wheel alignment procedure (Ref.32-21-00, Adjustment/Test).

(18) Install static discharger.

(19) Charge shock absorber (Ref.32-21-24, Servicing).

(20) Bleed brake system (Ref.32-46-00, Servicing).

(21) Apply Product No.361 (Ref.20-30-00) to following areas:

(a) Washer heads of screws (20), leaving centre holes in contact with air.

(b) Lower housing (21) and gear leg junction.

(22) Coat cover (12) and gear leg junction with Product No.362 (Ref.20-30-00).

(23) Lubricate lower housing (21).

(24) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Check particularly that no trace of hydraulic fluid remains.

(25) Remove safety sleeves and collars.

(26) Remove access platform.

(27) Remove safety clips and tags and reset circuit breakers

(28) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(29) Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(30) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(31) Place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(32) Close doors by operating handle located on the nose gear leg. Install locking cap.

(33) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gear downlocked).

(34) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(35) Shut down and disconnect hydraulic ground power unit.

(36) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(37) Check fluid level in Green and Yellow hydraulic tanks. Top up as required (Ref. 12-12-29).

F. Tests

Test nose gear tachometer generators (Ref. 32-43-00, Adjustment/Test).

G. Close-Up

(1) Close access doors.

(2) Make certain that area under aircraft is clear.

(3) Remove safety stay.

(4) Lower aircraft onto its wheels.

(5) Remove warning notice from flight compartment.

SHOCK ABSORBER - INSPECTION/CHECK

1. General

- A brief visual inspection, with a shock absorber compression check, constitutes the shock absorber cursory check. This operation is carried out with aircraft on wheels (paragraph 2).

- A more thorough inspection involves checking of pressures of both shock absorber nitrogen chambers. This operation can be carried out either with aircraft on wheels (paragraph 3), or on jacks (paragraph 4).

2. Shock Absorber Cursory Check
R (Ref. Fig.601 and 602)

A. Equipment and Materials

DESCRIPTION	PART NO.
Rule 500 mm (20 in.)	

B. Cursory Check

(1) Visually check sliding tube for correct condition.

(2) Make certain that there are no hydraulic fluid leaks (seepage).

(3) Check shock absorber sliding tube remaining travel.

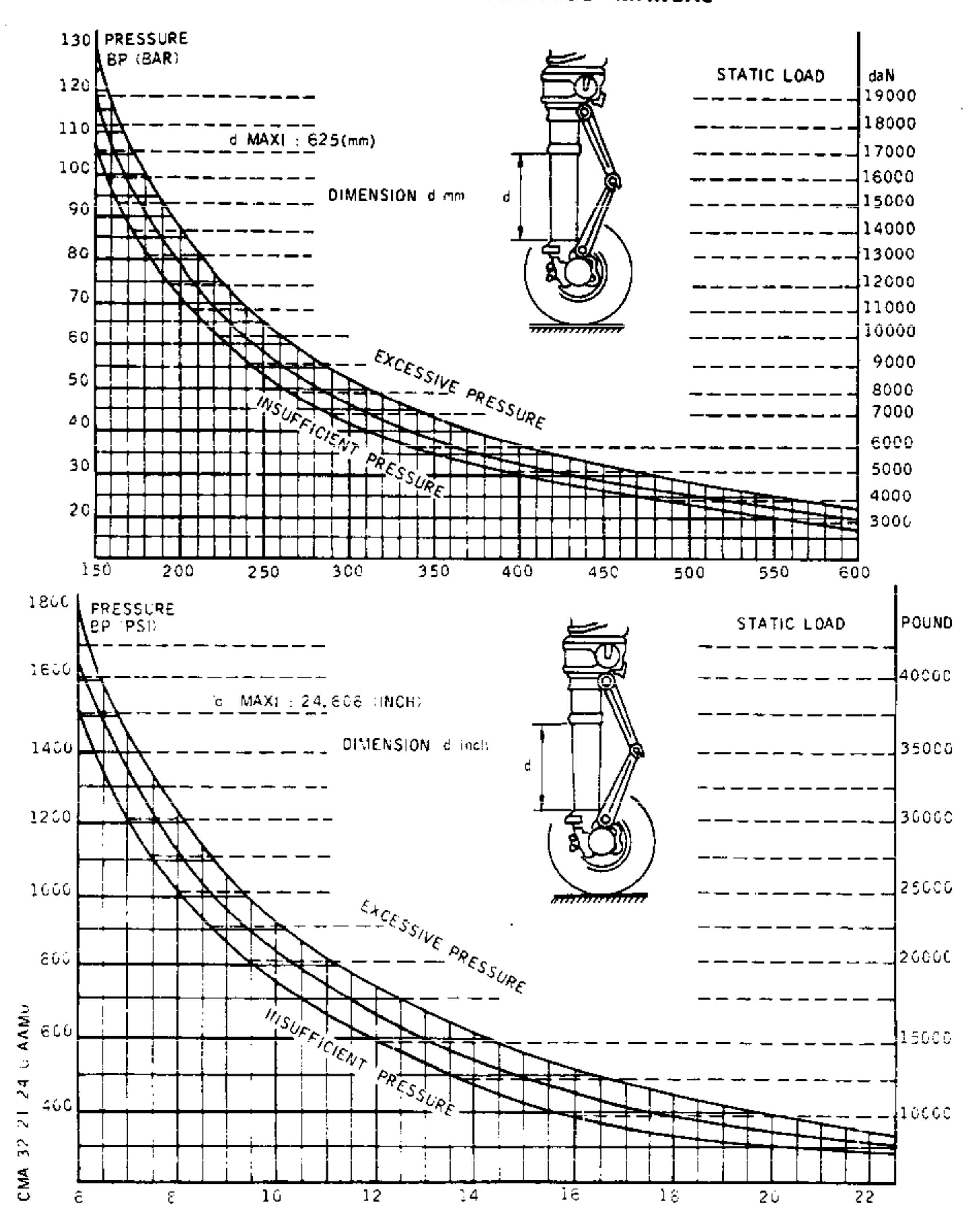
NOTE : This dimension indicates approximately if charging is correct.

R (a) Measure dimension "d" on sliding tube.

R (b) The curve (cursory check of shock absorber com-
R pression) indicates the dimension "d"; shock ab-
R sorber remaining travel according to load (Ref.
R graph : Reaction on Nose Landing Gear versus CG).

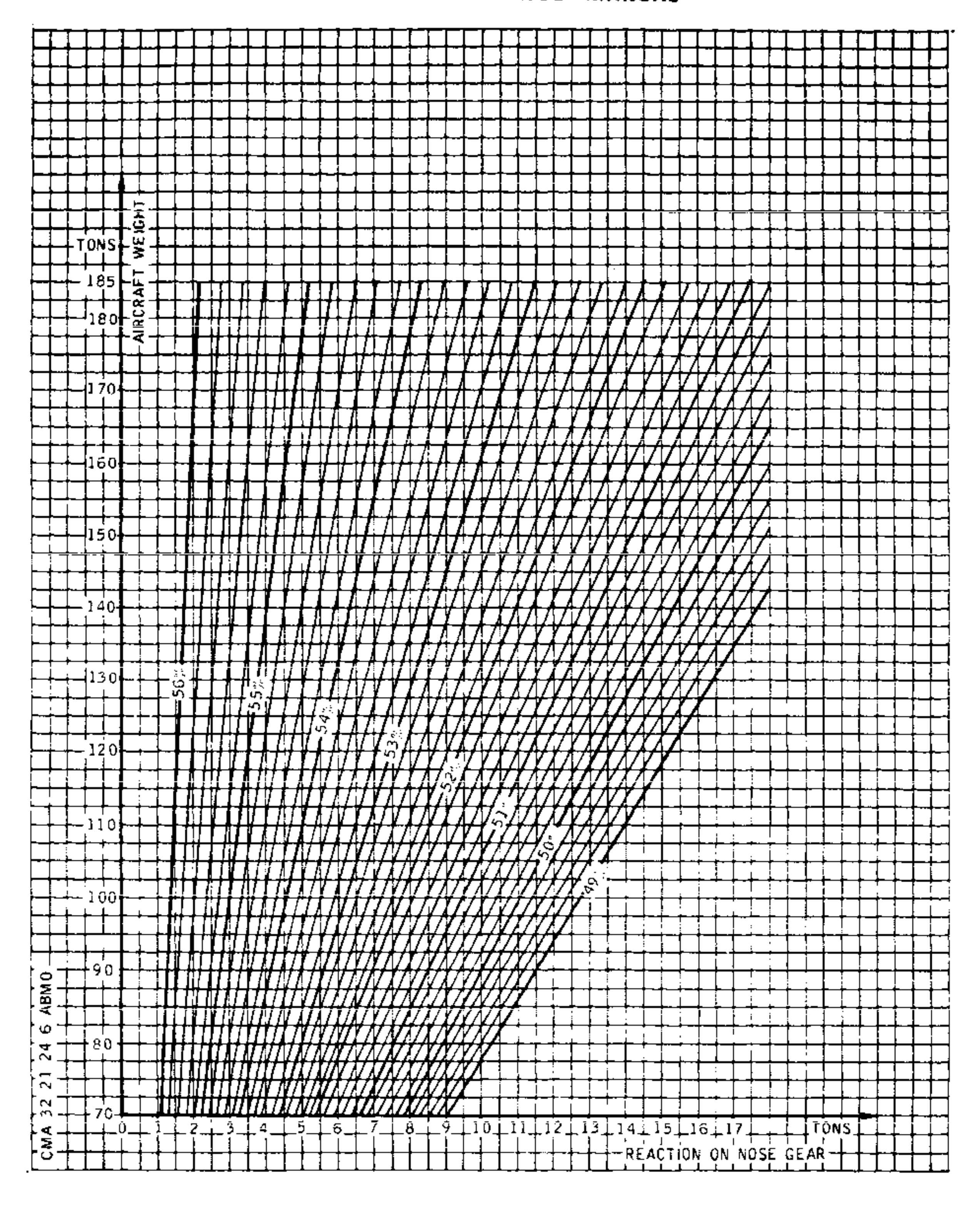
R NOTE : The curve (cursory check of shock absorber
R compression) is indicated on a plate bonded to the landing gear leg.

R (c) If dimension "d" is too small, refer to the following paragraph in order to check the relation-



Cursory Check - Shock Absorber Compression
Figure 601

R



Reaction on Nose Landing Gear versus CG
R Figure 602

ship between the pressure and the shock absorber remaining travel.

RB C. Shock Absorber Seal Leaks

RB (1) Landing Gear shock absorber leaks normally occur due to defective dynamic seals. Guidance is given below on such leaks. Leaks that occur for different reasons, e.g. leaking nitrogen valve or cylinder scoring shall be dealt with independently as appropriate.

RB CAUTION: THE ACTION TO BE TAKEN ON ANY LEAK SHALL BE APPROPRIATE TO THE SEVERITY AND FREQUENCY OF THE OCCURRENCE. EXCESSIVE LOSS OF FLUID AND/OR NITROGEN WILL ADVERSELY EFFECT THE PERFORMANCE OF THE ABSORBER AND CAN CAUSE INTERNAL STRUT DAMAGE.

RB (2) Shock Absorber Dynamic Seal Leaks

RB (a) Dynamic seal leaks generally occur due to seal wear. Normally such leaks are progressive, sufficiently minor and intermittent in nature to permit monitoring and planned action.

RB (b) Minor leaks include small/moderate extension losses and small losses of fluid. The first, which can be corrected and the latter deferred for correction. The shock absorber should function effectively to the next servicing opportunity.

RB (c) More immediate corrective action must be taken for serious leaks.

RB (d) Monitoring Minor Shock Absorber Dynamic Seal Leaks:-

RB NOTE: Monitor the leaks in the sequence shown below. Should further leaks occur repeat this monitoring sequence from the start. After the completion of the sequence, i.e. the ADD is cleared or the gear serviced.

RB 1 At the first leak, raise an ADD for surveillance with a terminating date 1 month ahead, stating "First Leak MM 32-21-24 P/b 600 Para C. applies."

RB 2 If no further leaks occur within the one month period, remove the ADD.

RB 3 If a second leak occurs within the one month period of the above ADD, revise the ADD to change the date to 1 month on from the date of the second leak, stating "Second Leak MM 32-21-24 page 604 para C applies.

4 If a third leak occurs within the revised ADD date schedule, a seal change is to be performed within 20 landings of the third leak and a visual inspection of the shock absorber for fluid leaks and proper extension to be performed, at each flight.

NOTE: If between the third leak and the planned seal change, further leaks occur, the absorber must be fully serviced IAW 32-21-24 P/b 300 Para 2. (Fluid and Nitrogen) to ensure the serviceability of the shock absorber. See CAUTION note in (1) above.

5 If no further leaks occur within the period stated in the ADD for the second leak, delete the ADD and raise a Maintenance Control File item, to require a full service IAW 32-21-24 P/b 300 Para 2. (Fluid and Nitrogen) at the next Hanger Based check. Should additional leaks occur between raising the Maintenance Control File item and the Hangar Check to accomplish it, a seal change is recommended instead of a fluid level check.

(3) Minor fluid leaks and very slow nitrogen leaks which are attributed to a defective Plunger/Sliding Tube dynamic seal, may sometimes be temporarily stopped by exercising the shock absorber, either by towing/taxying or by manipulating absorber pressures and jacking.

3. Shock Absorber Pressure Check - Aircraft on Wheels
(Ref. Fig. 603, 604 and 605)

WARNING : SHOULD ANY SERVICING BE REQUIRED AS A RESULT OF THE FOLLOWING CHECKS, IT IS ESSENTIAL THAT THE HP CHAMBER BE FULLY SERVICED BEFORE THE LP CHAMBER.

NOTE : After flight or taxiing, wait at least half an hour before checking shock absorber characteristics.

A. Equipment and Materials

DESCRIPTION	PART NO.
Pressure Gauge No.3 of the HYDRAULIC AIR test set	
Rule 500 mm (20 in.)	

B. HP Chamber Pressure Check (Ref. Fig.604 and 605)

NOTE : Access valve is located on valve assembly upper part.

(1) Open cover.

(2) Remove valve cap.

(3) Install pressure gauge.

(4) Unscrew valve, one and a half turns maximum.

WARNING : HOLD VALVE BODY WHEN OPENING AND CLOSING VALVE.

(5) Read and note pressure.

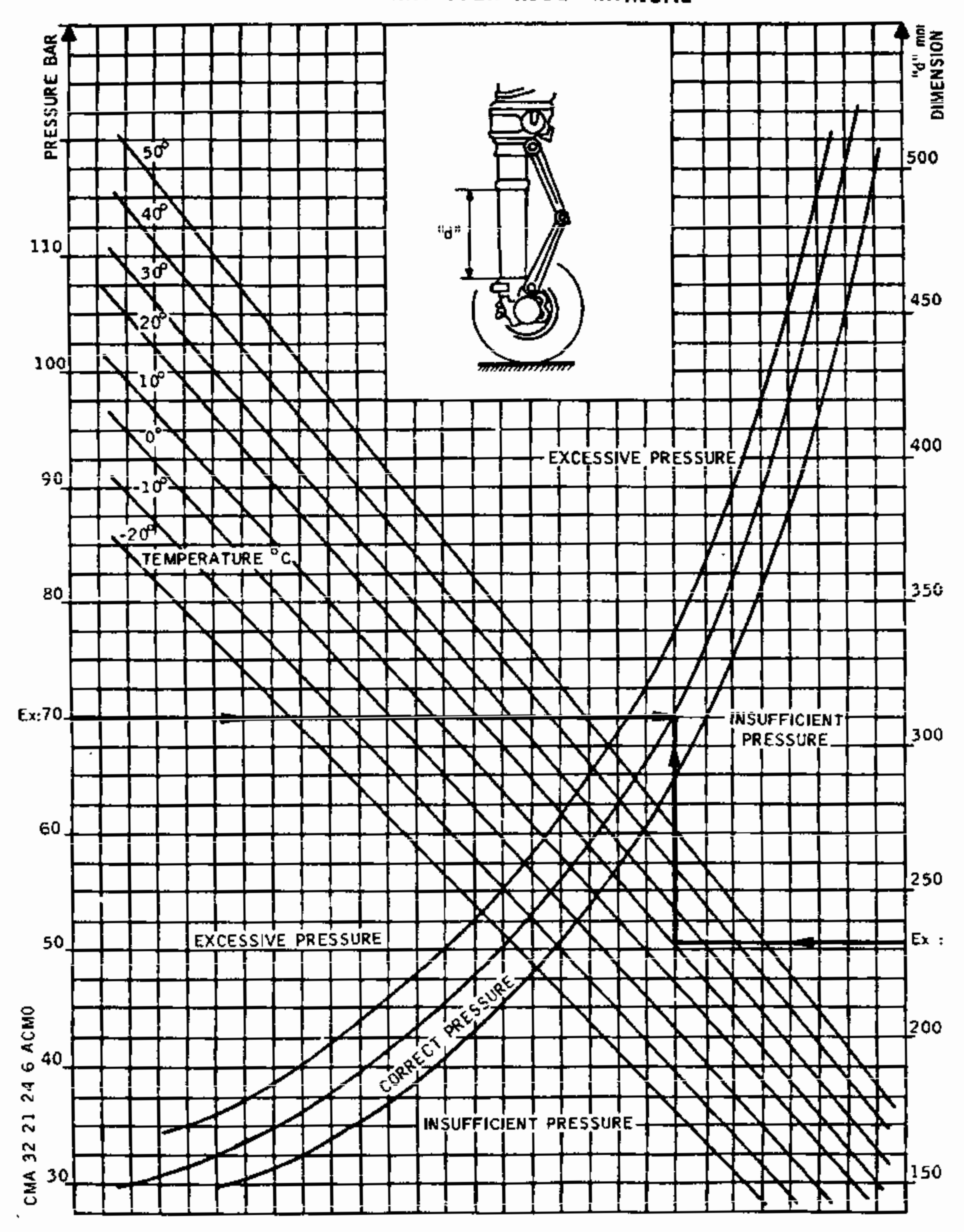
Compare pressure reading to the one corresponding to shock absorber initial charging according to ambient temperature.

(6) Close valve and remove pressure gauge.

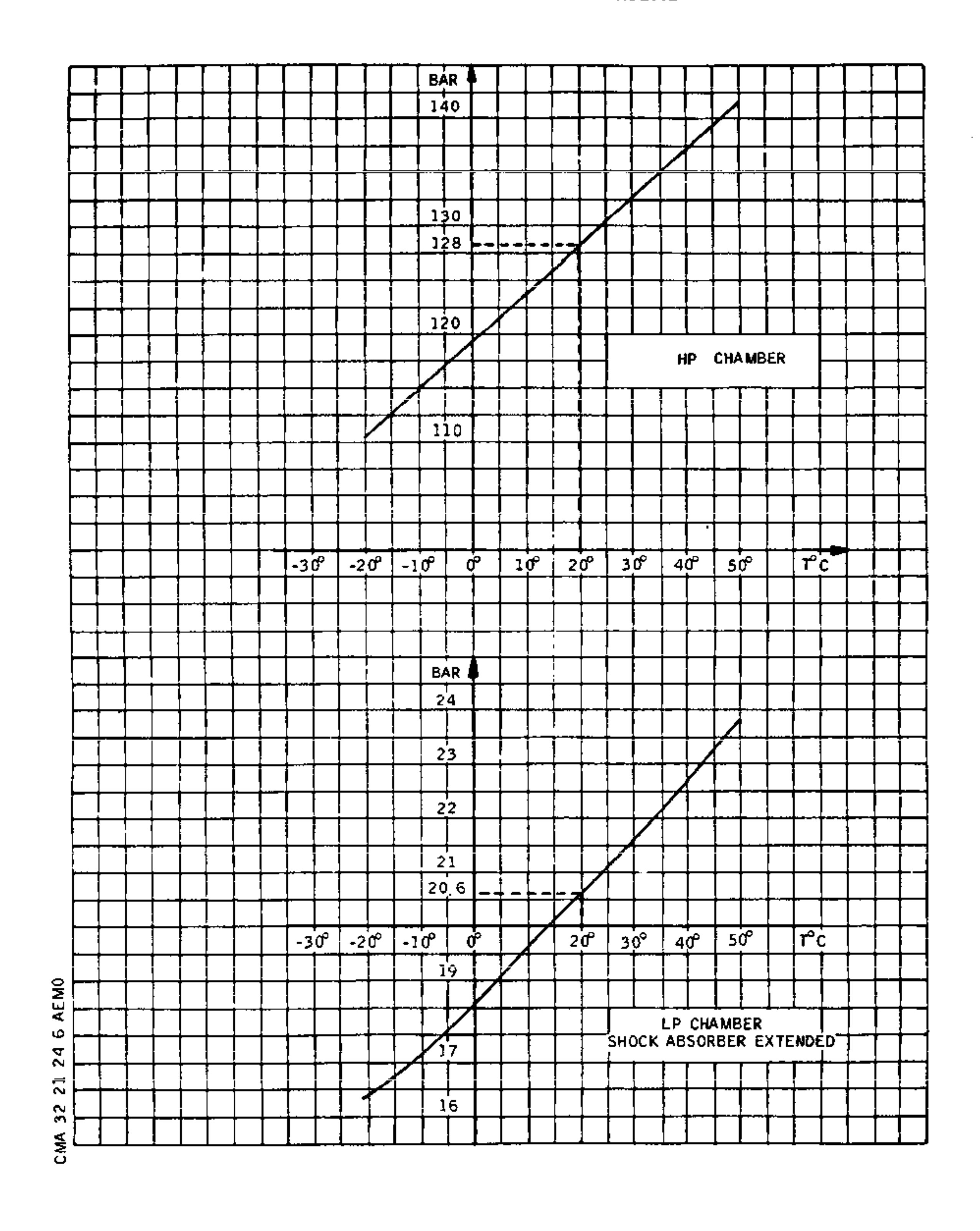
(7) If pressure is correct.

(a) Install valve cap.

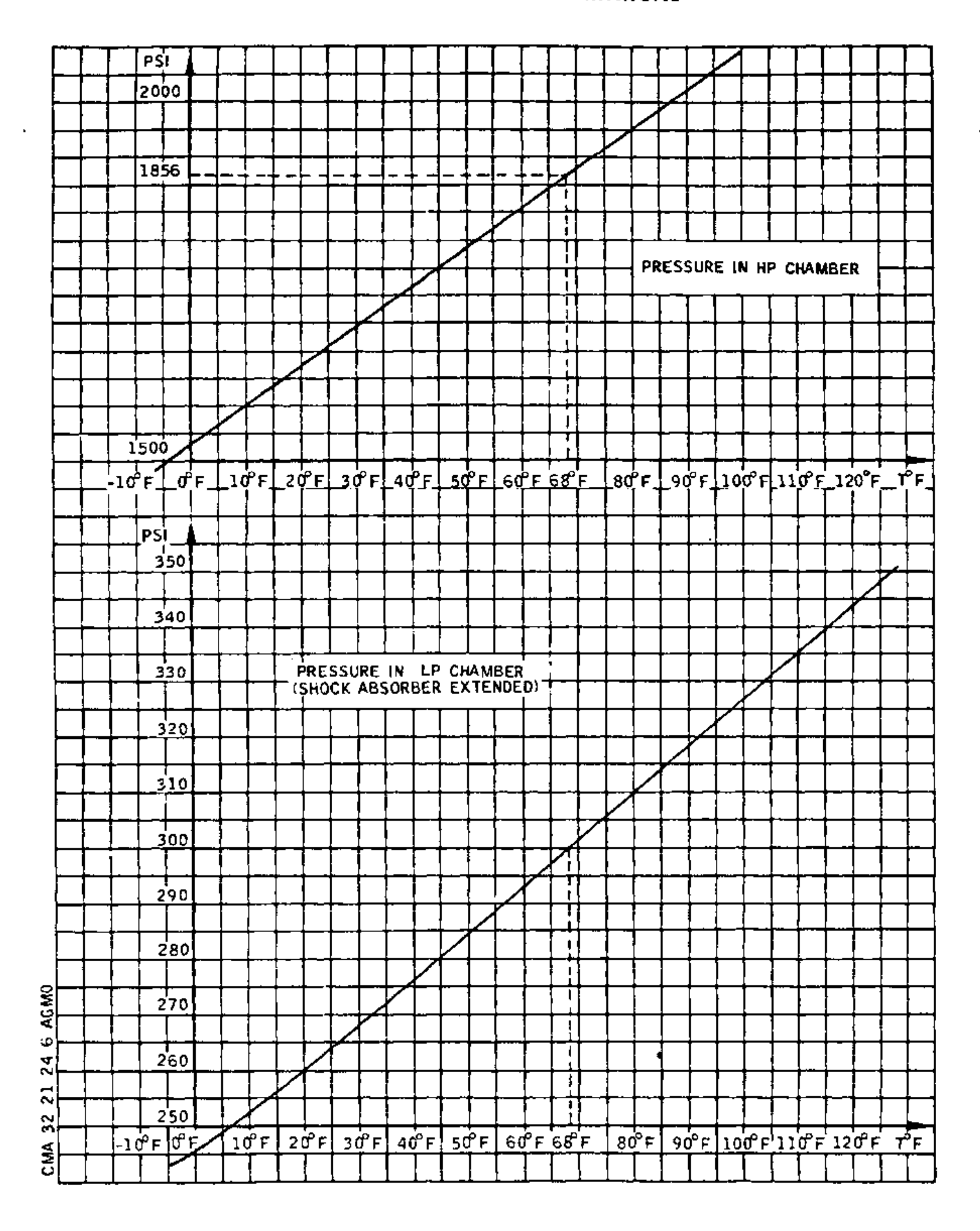
(b) Close cover.



Low Pressure - Aircraft on Wheels
Figure 603



Shock Absorber Pressure - in Bars
Figure 604



Shock Absorber Pressure - in PSI
Figure 605

(8) If pressure is incorrect, refer to Trouble Shooting and Servicing topics.

C. LP Chamber Pressure Check (Ref. Fig. 603)

<u>NOTE</u> : Access valve is located on the valve assembly lower part.

(1) Open cover.

(2) Remove LP valve cap.

(3) Install pressure gauge.

(4) Unscrew valve nut one and a half turns maximum.

<u>WARNING</u> : HOLD VALVE BODY WHEN OPENING AND CLOSING VALVE.

(5) Check relation ship between LP chamber pressure and shock absorber "d" remaining travel.

(a) Note pressure read on pressure gauge.

(b) Check on corresponding graph, of remaining travel and pressure intersection point, as a function of ambient temperature, is located in the permissible area.

(b1) Mark noted pressure on Y axis (pressure scale) and from this point, draw a horizontal line to the right.

(b2) Mark noted "d" value, on Y axis (remaining travel scale in mm) and, from this point, draw a horizontal line to the left as far as intersection point with selected temperature line.

(b3) From this intersection, draw a vertical line cutting the "noted pressure" horizontal line.

<u>NOTE</u> : Intersection must be in "correct pressure" curve min.-max. tolerance band.

(6) Tighten valve, and remove pressure gauge.

(7) If pressure is correct :

(a) Install valve cap.

R (b) Close cover.

R (8) Iff pressure is incorrect, refer to Trouble Shooting
R and Servicing topics.

4. Shock Absorber Pressure Check - Aircraft on Jacks (Ref. Fig.604 and 605)

WARNING : SHOULD ANY SERVICING BE REQUIRED AS A RESULT OF THE FOLLOWING CHECKS, IT IS ESSENTIAL THAT THE HP CHAMBER BE FULLY SERVICED BEFORE THE LP CHAMBER.

A. Equipment and Materials

DESCRIPTION	PART NO.
Pressure Gauge No.3 of HYDRAULIC AIR Test Set	

B. HP Chamber Pressure Check (Ref. Fig.604 and 605)

NOTE : Access valve is located on valve assembly upper part.

(1) Open cover.

(2) Remove valve cap.

(3) Install pressure gauge.

(4) Unscrew valve, one and a half turns maximum.

WARNING : HOLD VALVE BODY WHEN OPENING AND CLOSING VALVE.

(5) Read and note pressure.

Compare pressure reading to the one corresponding to shock absorber initial charging according to ambient temperature.

(6) Close valve and remove pressure gauge.

(7) If pressure is correct :

(a) Install valve cap.

(b) Close cover.

(8) If pressure is incorrect, refer to Trouble Shooting and Servicing topics.

C. LP Chamber Pressure Check.

R NOTE : Access valve is located on valve assembly lower part.

R (1) Open cover.

R (2) Remove LP valve cap.

R (3) Install pressure gauge.

R (4) Unscrew valve, one and a half turns maximum.

R WARNING : HOLD VALVE BODY WHEN OPENING AND CLOSING
R VALVE.

R (5) Read and note pressure.

R Compare pressure reading to the one corresponding to
R shock absorber initial charging according to ambient
R temperature.

R (6) Close valve and remove pressure gauge.

R (7) If pressure is correct

R (a) Install valve cap.

R (b) Close cover.

R (8) If pressure is incorrect, refer to Trouble Shooting and
R Servicing topics.

NOSE LANDING GEAR DOORS - DESCRIPTION AND OPERATION

1. General

The nose landing gear assembly includes two main doors, two secondary doors and a telescopic drag strut door.

A. Main Doors

These are fitted on five hinges installed at each side of the gear bay front section. They are electro-hydraulically
R operated and are opened by a hydraulic jack during gear
R extension and retraction. They may also be opened by means
R of a manually operated ground opening system.

One end of the jack is connected to the aircraft structure and the other end to the centre of the door.

Each door includes :

(1) Two lock rollers positioned to engage in the uplocks. The rollers serve to mechanically uplock the door by engagement with the uplocks attached to the aircraft structure. Door uplock hook release is achieved hydraulically at the start of the door opening phase.

(2) An air vent providing negative pressure created by air movement across the vent.

(3) A retractable taxiing light installed in the door.

(4) A ramp serving to open the gear door during Emergency nose gear extension.

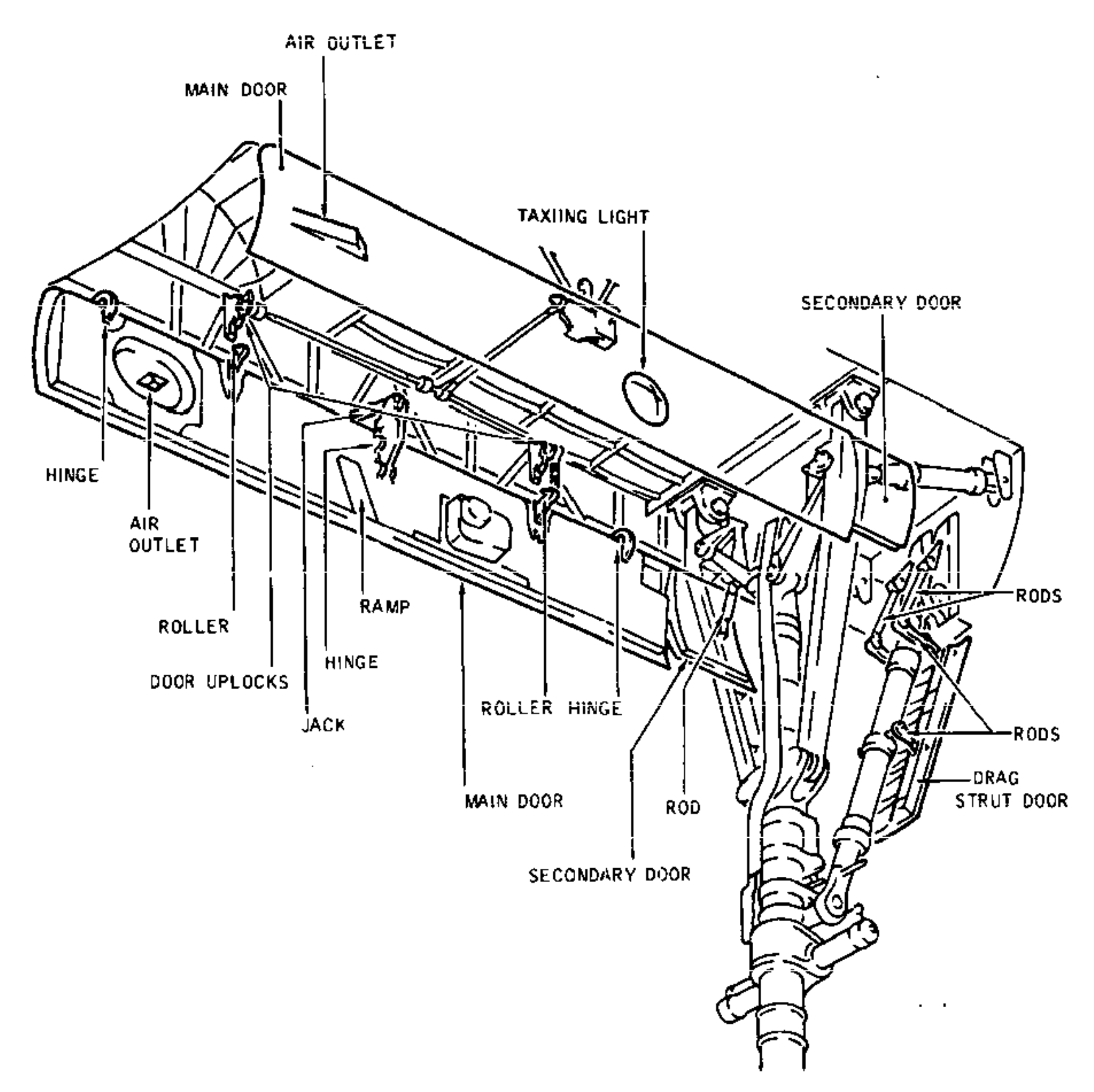
During nose gear extension, the end of the steering cylinder comes up against this ramp and ensures door opening.

B. Secondary Doors

They form a rear extension to the main doors and are attached either side of the landing gear bay by two hinges. The movement of each door is linked to that of the landing gear by means of a rod.

C. Drag Strut Door

This is attached under the drag strut by four links. Two of them are secured to the aircraft structure by hinged



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R

Nose Landing Gear Doors
Figure 001

rods.

In the landing gear UP position this system enables, the door to close, thus restoring the external profile of the fuselage.

MAIN DOORS - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITION OF NOSE AND MAIN GEAR DOORS CORRESPONDS WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two main doors blank off nose gear bay when the gear is uplocked or downlocked. Each main door is hinged to structure by means of five fittings. The door actuating jack is connected to the centre fitting. On each side of the centre fitting are two roller-carrier fittings, each roller engaging the hook of the corresponding uplock when the door is closed.
The front fitting is attached to a rod and cam assembly which transmits door position information to a microswitch fitted to a structural support.

2. Main Doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door Actuating Cylinder	D921317000
Extractors/Inserters - N.L.G. Door Hinge Pins	D921623000
Safety Sleeve - Nose Landing Gear Doors	D925002000
Access Platform 3.220 m (10 ft. 7 in.)	
Circuit Breaker Safety Clips	
Common Grease (Ref. 20-30-00, No.051)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's Instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating

handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in flight compartment.

(12) Install safety sleeves and collars.

C. Remove (Ref. Fig.401 and 402)

(1) Disconnect land/taxi light electrical wiring (Ref. 33-44-11, Removal/Installation).

(2) Disconnect the two bonding strips on door hinge fittings (25) and (30).

(3) Remove housing of microswitch control.

(4) Remove roller carrier (5).

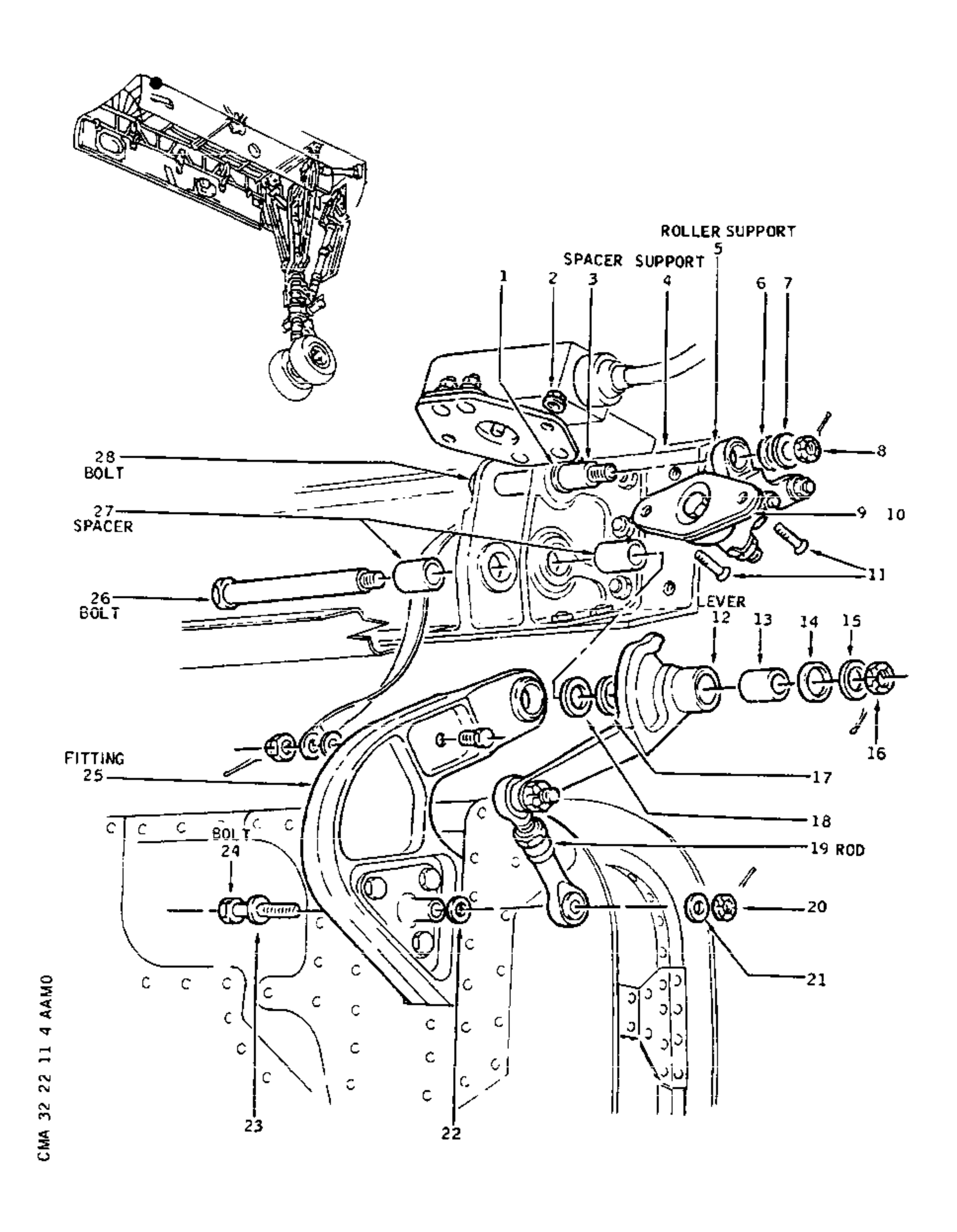
(a) Remove nuts (2) and bolts (11).

(b) Disconnect dust cover (9) and retaining plate (10) from support (4).

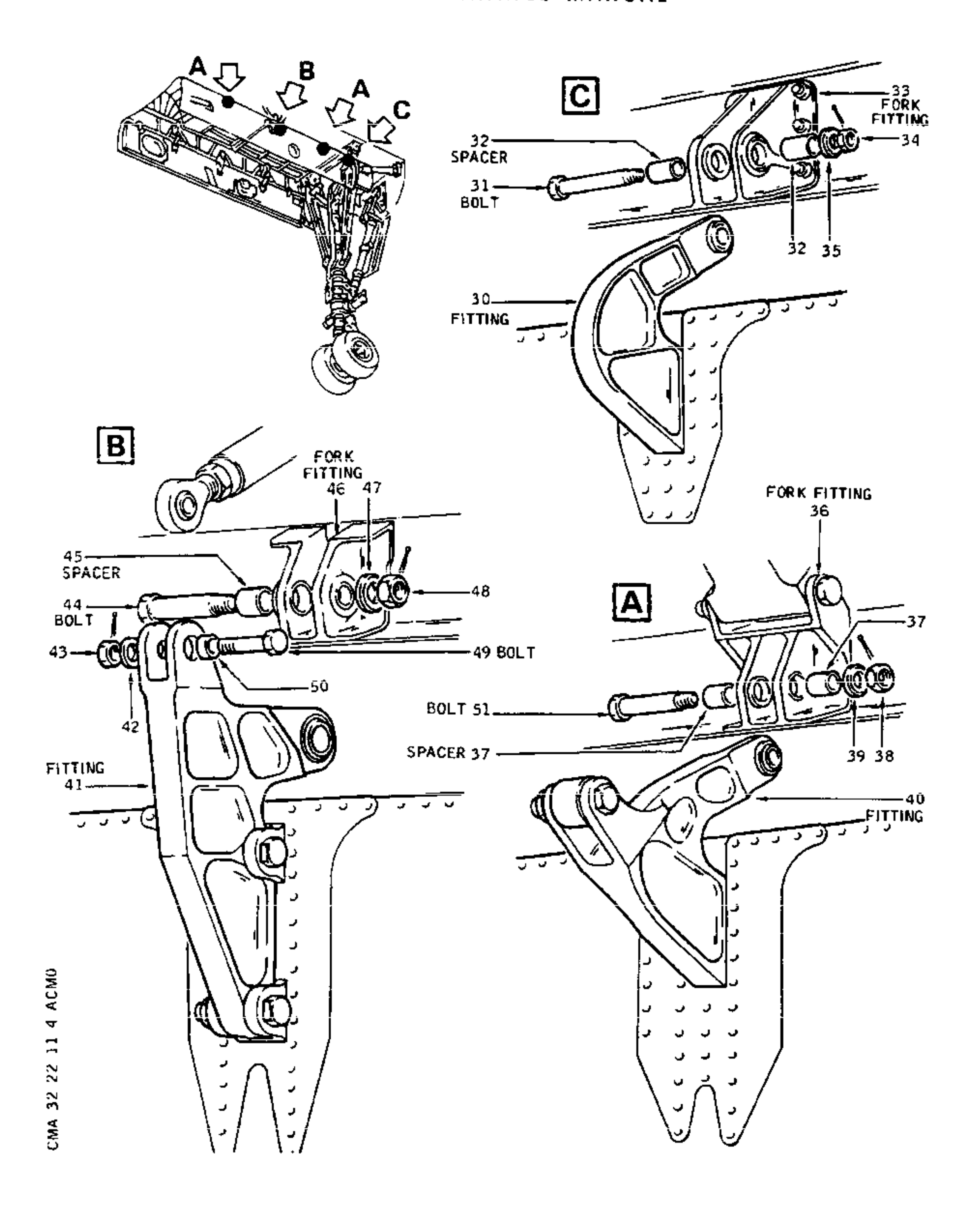
(c) Remove cotter pin, remove nut (8) and washers (7) and (6).

<u>NOTE</u> : Spacer (3) and washer (1) must remain in position on bolt (28).

(5) Remove lever assembly (12), rod (19).



Main Door - Front Hinge
Figure 401



Main Door - Rear Hinge
Figure 402

(a) Remove cotter pin, remove nut (20) and washer (21).

(b) Remove bolt (24) and retain washers (22) and (23) for reinstallation.

(c) Remove cotter pin, remove nut (16), and washers (15) and (14).

(d) Remove lever (12) and rod (19) assembly, retain spacer (13) and washers (17) and (18) for reinstallation.

(e) Remove bolt (26) and retain the two spacers (27) for reinstallation.

(6) Disconnect the spherical bearing end fitting of door actuating jack from fitting (41).

(a) Remove cotter pin, remove nut (43), washer (42), and bolt (49).

(b) Retain spacer (50) for reinstallation.

(7) Disconnect fitting (41) from fork fitting (46).

(a) Remove cotter pin, remove nut (48), washer (47) and bolt (44).

(b) Retain spacer (45) for reinstallation.

(8) Disconnect fitting (30) from fork fitting (33).

(a) Remove cotter pin, remove nut (34), washer (35), and bolt (31).

(b) Retain spacers (32) for reinstallation.

(9) Disconnect the two fittings (40) from fork fitting (36).

(a) Remove cotter pins, remove nuts (38), and washers (39).

WARNING : PLACE PACKING UNDER DOOR AND MAINTAIN DOOR IN UPRIGHT POSITION.

(b) Remove the two bolts (51).

(c) Retain the two spacers (37) for reinstallation.

(d) Remove door.

D. Preparation of Replacement Component

(1) Check condition of hinge fitting spherical bearings. If necessary clean and apply grease.

(2) Remove land/taxi light from removed door and install it on replacement door (Ref. 33-44-11, Removal/Installation).

E. Install

CAUTION : In order to facilitate door installation and avoid damage to the hinge fitting bearing bore, the threaded section of each shouldered bolt must be protected with tool P/N D921623000.

(1) Position door vertically and position the fittings in their associated fork fittings.

(2) Connect the two fittings (40) and fork fittings (36).

(a) Install spacers (37) on fork fittings (36).

(b) Apply grease on bolts (51).

(c) Install bolts (51) with their heads facing the stop plate.

(d) Install washers (39) and install nuts (38).

(e) Tighten nuts (38).
Torque to between 100 and 120 lbf.in. (1 and 1.3 m.daN).

(3) Assemble fitting (41) to fork fitting (46).

(a) Install spacer (45).

(b) Apply grease on bolt (44).

(c) Install bolt (44) with its head facing spacer.

(d) Install washer (47) and install nut (48).

(e) Tighten nut (48).
Torque to between 295 and 320 lbf.in. (3.2 and 3.6 m.daN).

(4) Assemble fitting (30) to fork fitting (33).

(a) Install the two spacers (32).

(b) Apply grease on bolt (31).

(c) Install bolt (31) with its head facing stop plate.

(d) Install washer (35) and install nut (34).

(5) Assemble fitting (25) to support (4).

(a) Install the two spacers (27).

(b) Apply grease on bolt (26).

(c) Install bolt (26).

(6) Assemble the spherical bearing end fitting of door actuating jack to fitting (41).

(a) Install spacer (50).

(b) Apply grease on bolt (49).

(c) Install bolt (49) with its head facing spacer.

(d) Install washer (42).

(e) Install nut (43).

(7) Install lever (12) and rod (19) assembly.

(a) On bolt (26), install washer (18), spacer (13) and washer (17).

(b) Offer up and position lever (12) on spacer (13).

(c) Install washer (14) on spacer (13).

(d) Install washer (15) on bolt (26).

(e) Install nut (16).

(f) Insert bolt (24) together with its washer (23) on fitting support (25).

(g) Install washer (22) on bolt (24).

(h) Assemble rod (19) to fitting (25).

(i) Install washer (21).

(j) Install nut (20).

(8) Connect roller carrier (5) to support (4).

(a) Make certain that washer (1) is in position on spacer (3).

(b) Position roller carrier assembly (5).

(c) Install washer (6) on spacer (3).

(d) Install washer (7) on bolt (28).

(e) Install nut (8).

(9) Safety nuts (48) (38) (34) (43) with cotter pins.

(10) Tighten nut (16) and safety with cotter pin. Torque to between 50 and 60 lbf.in. (0.6 and 0.7 m.daN)

(11) Tighten nuts (8) (20) and safety with cotter pins.

(12) Install dust cover (9) and retaining plate (10) on support (4).

(a) Install bolts (11) and tighten nuts (2).

(13) Connect the two bonding strips on door hinge fitting (25) and (30).

(14) Connect land/taxi light electrical wiring (Ref. 33-44-11, Removal/Installation).

(15) Install housing or microswitch control.

(16) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(17) Remove safety sleeves and collars.

(18) Remove access platform.

(19) Remove safety clips and tags and reset circuit breakers.

(20) Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

(21) On First Officer's instrument panel, place the landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(22) Close doors by operating handle located on nose gear leg. Install locking cap.

(23) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Adjustment/Test

Carry out door adjustment (Ref. 32-22-11, Adjustment/Test).

G. Close-up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove warning notice from flight compartment.

MAIN DOORS - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT TRAVEL RANGES OF CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two main doors blank off nose gear bay when the gear is uplocked or downlocked. Each main gear is articulated at structure by means of five hinge fittings. The door actuating jack is connected to the centre fitting. On each side of the centre fitting are two roller-carrier fittings, each roller engaging the hook of the corresponding uplock when the door is closed. The front fitting is attached to a rod and cam assembly which transmits door position information to a microswitch fitted to a structural support.

2. Main Doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Extractors/Inserters - N.L.G. Door Hinge Pins	D921623000
Electrical Ground Power Unit	
Safety Sleeve - Nose Under-Carriage Doors	E925002000

DESCRIPTION	PART NO.
Access Platform 3.220 m (10 ft. 7 in.)	
Circuit Breaker Safety Clips	
Common Grease (Ref. 20-30-00, No.051)	
Safety Collars - Main Landing Gear Door Actuating Cylinder	D921317000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on the nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in flight compartment.

(12) Install safety sleeves.

C. Remove (Ref. Fig.401 and 402)

(1) Disconnect land/taxi light electrical wiring (Ref. 33-44-11, Removal/Installation).

(2) Disconnect the two bonding strips on door hinge fittings (23) and (30).

(3) Remove housing of microswitch control.

(4) Remove roller support (6).

(a) Remove nuts (2) and bolts (9).

(b) Disconnect dust cover (7) and retaining plate (8) from support (1).

(c) Remove cotter pin, remove nut (4) and washer (3).

(d) Remove bolt (26) and spacer (27).

(e) Retain washers (5) for reinstallation.

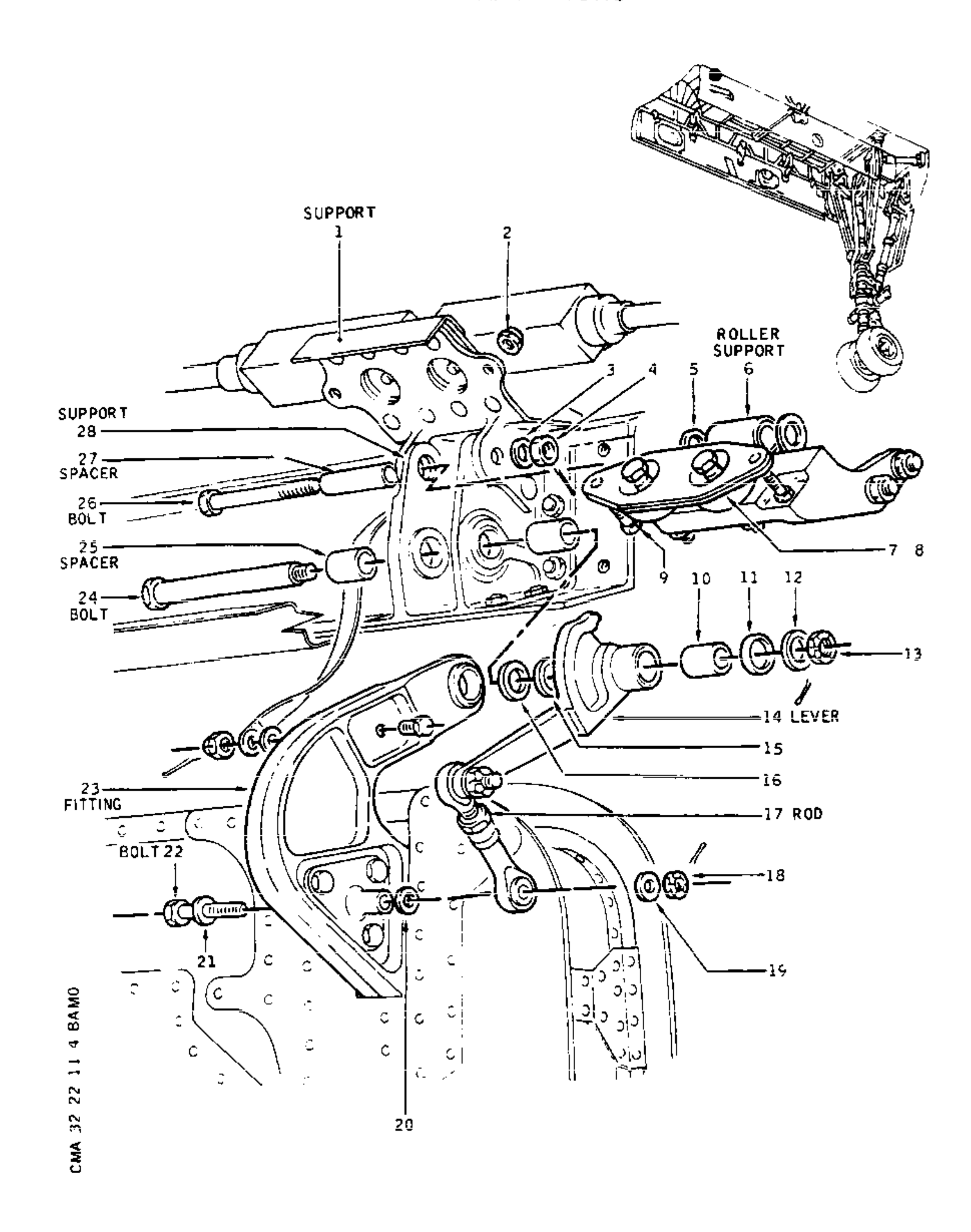
(5) Remove lever (14) and rod (17) assembly.

(a) Remove cotter pin, remove nut (18) and washer (19).

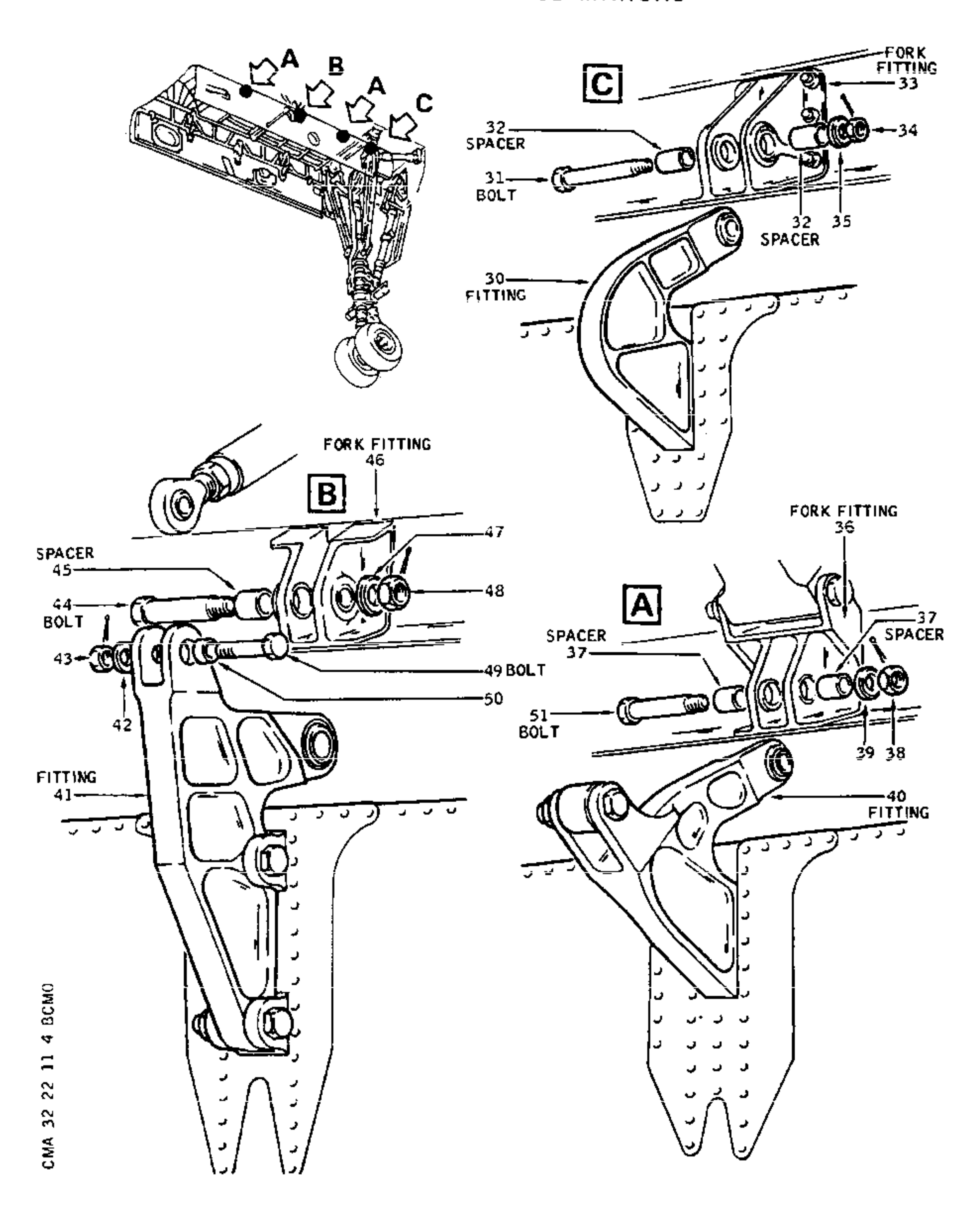
(b) Remove bolt (22) and retain washers (20) and (21) for reinstallation.

(c) Remove cotter pin, remove nut (13), remove washers (11) and (12).

(d) Remove lever (14) and rod (17) assembly, retain spacer (10) and washers (15) and (16) for reinstallation.



Main Door - Front Hinge
Figure 401



Main Door - Rear Hinge
Figure 402

(e) Remove bolt (24) and retain the two spacers (25) for reinstallation.

(6) Disconnect the spherical bearing end-fitting of door actuating jack from fitting (41).

(a) Remove cotter pin, remove nut (43), washer (42), and bolt (49).

(b) Retain spacer (50) for reinstallation.

(7) Disconnect fitting (41) from fork fitting (46).

(a) Remove cotter pin, remove nut (48), washer (47), and bolt (44).

(b) Retain spacer (45) for reinstallation.

(8) Disconnect fitting (30) from fork fitting (33).

(a) Remove cotter pin, remove nut (34), washer (35), and bolt (31).

(b) Retain spacers (32) for reinstallation.

(9) Disconnect the two fittings (40) from fork fittings (36).

(a) Remove cotter pins, remove nuts (38), remove washers (39).

WARNING : PLACE PACKING UNDER DOOR AND MAINTAIN DOOR IN UPRIGHT POSITION.

(b) Remove the two bolts (51).

(c) Retain the two spacers (37) for reinstallation.

(d) Remove door.

D. Preparation of Replacement Component

(1) Check condition of hinge fitting spherical bearings. If necessary clean and apply grease.

(2) Remove land/taxi light from removed door and install it on replacement door (Ref. 33-44-11, Removal/Installation).

E. Install

NOTE : In order to facilitate door installation and avoid damage to the hinge fitting bearing bore, the threaded section of each shouldered bolt must be protected with tool, P/N D921623000.

(1) Position the door vertically and position the fittings in their associated fork fittings.

(2) Connect the two fittings (40) to fork fittings (36).

(a) Install spacers (37) on fork fittings (36).

(b) Apply grease on bolts (51) (Product No.051).

(c) Install bolts (51) with their heads facing the stop plate.

(d) Install washers (39) and nuts (38).

(e) Tighten nuts (38).
Torque to between 100 and 120 lbf.in. (1 and 1.3 m.daN).

(3) Assemble fitting (41) to fork fitting (46).

(a) Install spacer (45).

(b) Apply grease on bolt (44).

(c) Install bolt (44) with its head facing spacer.

(d) Install washer (47) and install nut (48).

(e) Tighten nut (48).
Torque to between 295 and 320 lbf.in. (3.2 and 3.6 m.daN).

(4) Assemble fitting (30) to fork fitting (33).

(a) Install the two spacers (32).

(b) Apply grease on bolt (31).

(c) Install bolt (31) with its head facing stop plate.

(d) Install washer (35) and install nut (34).

(e) Tighten nut (34).
Torque to between 50 and 60 lbf.in. (0.6 and

0.7 m.daN).

(5) Assemble fitting (23) to support (28).

(a) Install the two spacers (25).

(b) Apply grease on bolt (24).

(c) Install bolt (24).

(6) Assemble the spherical bearing end-fitting of door actuating jack to fitting (41).

(a) Install spacer (50).

(b) Apply grease on bolt (49).

(c) Install bolt (49) with its head facing spacer.

(d) Install washer (42).

(e) Install nut (43).

(7) Install lever (14) and rod (17) assembly.

(a) On bolt (24), install washer (16), spacer (10) and washer (15).

(b) Offer up and position lever (14) on spacer (10).

(c) Install washer (11) on spacer (10).

(d) Install washer (12) on bolt (24).

(e) Install nut (13).

(f) Install bolt (22) together with its washer (21) on fitting support (23).

(g) Install washer (20) on bolt (22).

(h) Assemble rod (17) to fitting (23).

(i) Install washer (19).

(j) Install nut (18).

(8) Connect roller support (6) to support (28).

(a) Offer up roller support (6) between cheeks of support (28).

(b) Apply grease on spacer (27) and insert it in roller support (6) and support (28) taking care a washer (5) is placed on each side of roller support (6).

(c) Apply grease on bolt (26), install it with its head facing spacer (27).

(d) Install washer (3).

(e) Install, tighten and safety nut (4) with cotter pin.

(9) Safety nuts (48) (38) (34) (43) with cotter pins.

(10) Tighten nut (13) and safety with cotter pin.
Torque to between 50 and 60 lbf.in. (0.6 and 0.7 m.daN).

(11) Tighten and safety nut (18) with cotter pin.

(12) Install dust cover (7) and retaining plate (8) on support (1).

(a) Install bolts (9) and tighten nuts (2).

(13) Connect the two bonding strips to door hinge fittings (23) and (30).

(14) Connect land/taxi light electrical wiring (Ref. 33-44-11, Removal/Installation).

(15) Install microswitch control housing.

(16) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(17) Remove safety sleeves.

(18) Remove access platform.

(19) Remove safety clips and tags and reset circuit breakers.

(20) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(21) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(22) Close doors by operating handle located on nose gear leg. Install locking cap.

(23) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Adjustment/Test

Carry out door adjustment (Ref. 32-22-11, Adjustment/Test).

G. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove warning notice from flight compartment.

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Adjustment of nose gear main doors

2. Main doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad-Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter-Lifting, LH	D924008000

DESCRIPTION	PART NO.
Pyramid Adapter-Lifting, RH	D924008001
Safety Stay	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Safety Barriers	
Access Platform 3.220 m (10 ft. 7 in.)	
Safety Sleeve - Nose Landing Gear Doors	E925002000

**ON A/C ALL

Lockwire Dia. 0.7 mm (0.028 in.) (Corrosion Resistant Steel)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Position safety barriers.

(6) Make certain that visor is not uplocked.

(7) Make certain that the following circuit breakers are reset :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(8) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(9) Connect hydraulic ground power unit to Green hydraulic system.

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(12) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(13) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(14) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(16) Display a warning notice in the flight compartment.

(17) Install safety sleeves.

(18) Not applicable

(19) Not applicable

C. Adjust

(1) Remove landing gear and shortening mechanism safety devices.

(2) Remove safety clips and tags and reset circuit breakers

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position. Operate hydraulic ground power unit to carry out a slow landing gear retraction.

(5) With landing gear uplocked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

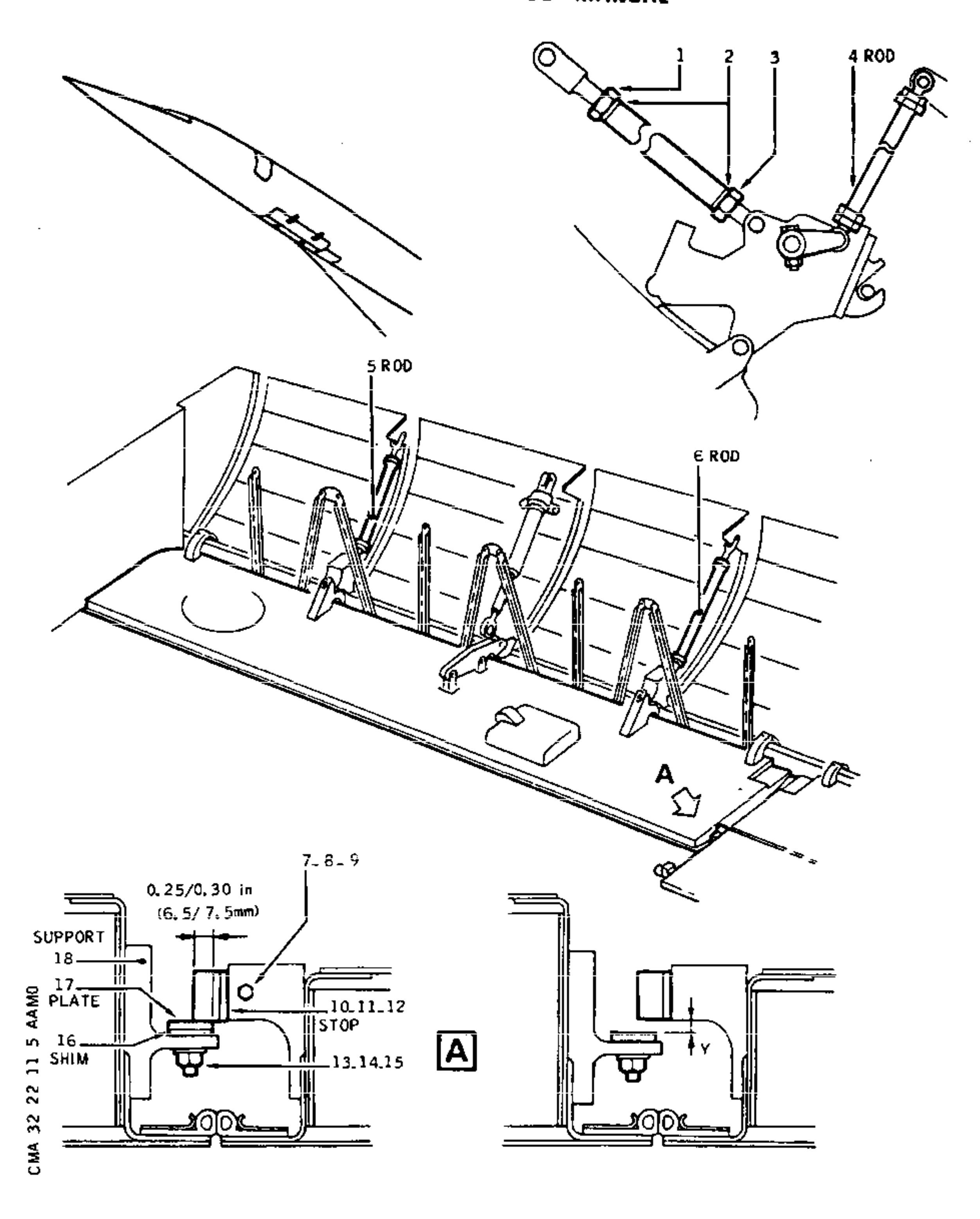
(7) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(8) Disconnect both nose main door actuating jacks and maintain these doors in open position.

WARNING : SUPPORT THE TWO ACTUATING JACKS DURING THE FOLLOWING OPERATIONS.

(9) On replacement door, remove shim (16) between support plate (17) and support (18). Temporarily install plate using bolts (13) washers (14) and nuts (15). Do not fully tighten at this stage.



Main Door - Adjustment
Figure 501

(10) Manually close replacement main door. Make certain that both door uplocks are closed and locked.

(11) Check at forward end, at frame 18, displacement of door with respect to fuselage surface.

If necessary, remove lockwire, loosen nuts (1)(3), disengage lockwashers (2) and screw or unscrew brace rod (5).

NOTE : Internal displacement of main door with respect to fuselage surface at frame 18 shall be between -0.20 and -0.30 in. (-5 mm and -7.5 mm)

(12) Check at frame 26, flush fitting between main door and drag strut and secondary doors.

If necessary screw or unscrew brace rod (6). Remove lockwire, loosen nuts (1) and (3) and disengage lock washers (2).

NOTE : The permissible displacement between main door and secondary door, and drag strut door is + 0.060 proud to - 0.020 in. inset (+ 1.5 to - 0.5 mm).

(13) Position lock washers (2), tighten nuts (1) and (3) of rods (5) and (6) and safety with lockwire (Ref. 20-21-13).

(14) Note dimension "y" between stop (10) and support plate (17).

(15) Adjust shim (16) to "y" dimension.

(16) Make certain that support plate (17) overlaps stop (10) by a value between 0.25 in. and 0.30 in. (6.4 to 7.6 mm).

(17) If an adjustment, by removal or installation of shims (12) is necessary, open door and proceed as follows :

(a) Remove stop by removing nut (9), washer (8) and bolt (7).

(b) Discard stop.

(c) Make adjustment with a replacement stop.

(d) Drill hole in stop spindle through support bolt mounting hole by means of 0.190 in. (4.8 mm) drill

(e) Install stop (10) washer (11) and shims (12) on support using bolt (7) washer (8) and nut (9). Safety with cotter pin.

(18) Open access door 221RF in passenger compartment. Remove locking pin from landing gear Ultimate Emergency extension control handwheel. Turn handwheel fully counterclockwise.
Make certain on each uplock that reference marks on uplock and ultimate emergency unlocking pin coincide.
If necessary, adjust rod (4).

WARNING : ON NOSE GEAR UPLOCK, DISCONNECT ULTIMATE EMERGENCY EXTENSION ROD AT THE UPPER END.

(19) Manually close main door opposite replacement door.

(20) Check clearance around door edges.

(a) Between main door forward edge and frame 18 : 0.18 to 0.30 in. (4.6 to 07.6 mm)

(b) Between main door and drag strut door : 0.08 to 0.22 in. (2 to 5.6 mm).

(c) Between main door and secondary door : 0.08 to 0.22 in. (2 to 5.6 mm)

(d) Between main door and structure : 0.18 to 0.30 in. (4.6 to 7.6 mm).

(e) Between main doors : 0.05 to 0.15 (1.3 to 3.8 mm).

(21) Check step between one main door and the other.

NOTE : The maximum permissible step between one main door in relation to the other is 0.10 in. (2.5 mm).

WARNING : MANUALLY SUPPORT DOORS DURING OPENING.

(22) Unlock gear doors in Ultimate Emergency position by turning control handwheel clockwise.

(23) Slowly open gear doors.

(24) Turn control handwheel fully counterclockwise, then turn it by 90° clockwise until locking pin can be inserted. Close access door 221RF.

(25) Remove support plate (17) and temporarily attach to

support (18).

(26) Install shim (16) adjusted to "y" dimension.

(27) Attach support plate (17) and shim (16) to support using bolts (13), washers (14) and nuts (15).

(28) Connect Ultimate Emergency extension control rod.

(29) Connect nose gear main door jacks.

(30) Not applicable

(31) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(32) Remove safety sleeves.

(33) Remove safety clips and tags and reset circuit breakers

(34) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

(35) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(36) Close doors by operating handle located on nose gear leg. Install locking cap

(37) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(38) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : ON FIRST OFFICERS INSTRUMENT PANEL, MAKE CERTAIN THAT THE FOUR GREEN ARROWS ON GEARS POSITION INDICATING UNIT ARE ILLUMINATED (GEARS DOWNLOCKED).

(39) Install landing gear and shortening mechanism safety devices.

D. Tests

Not applicable.

E. Close-Up

(1) Remove access platform.

(2) Shut down and disconnect hydraulic ground power unit.

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Remove safety barriers. Make certain that area under aircraft is clear.

(5) Remove safety stay.

(6) Lower aircraft onto its wheels.

(7) Remove warning notice from flight compartment.

SECONDARY DOORS - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two secondary doors are installed at the rear and in continuation of the main doors.
Each secondary door is hinged to the aircraft structure at two points and articulates with the gear via a link rod.

2. Secondary Doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Undercarriage Doors	E925002000
Access Platform 3.46 m (11 ft. 4 in.)	
Circuit Breaker Safety Clips	

**ON A/C ALL

General Lubricants (Ref. 20-30-00,

DESCRIPTION	PART NO.

No.051)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in the flight compartment.

(12) Install safety sleeves on door actuating jacks.

C. Remove

(1) Remove seal holder (11).

(a) Remove seal (12) from its groove.

(b) Remove screw (13) and seal holder (11).

(2) Disconnect bonding jumper.

(3) On rod fork end-fitting (14) and swivel-end lug (17) assembly.

(a) Remove cotter pin.

(b) Remove nut (15). Retain washer (16) for reinstallation.

(c) Remove pin (18).

(4) On door front hinge.

(a) Remove cotter pin.

(b) Remove nut (6).

(c) Retain washers (7) and (8) for reinstallation.

(d) Remove pin (10), retain spacer (9) for reinstallation.

(5) On door rear hinge.

(a) Remove cotter pin.

(b) Remove nut (1).

(c) Remove washer (2).

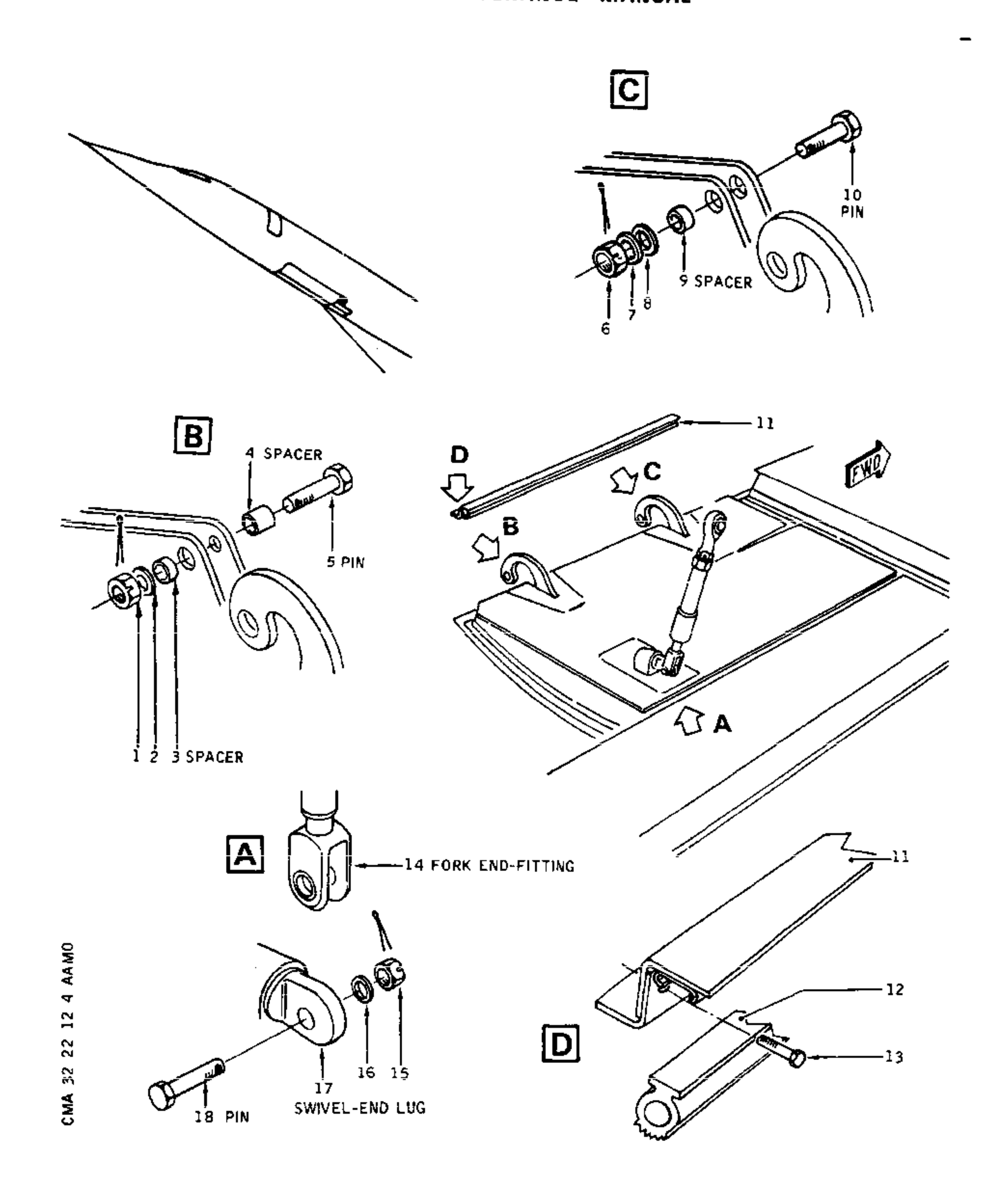
(d) Remove pin (5). Retain spacers (3) and (4) for reinstallation.

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Position replacement door with front and rear hinge



Secondary Door
Figure 401

fittings aligned with structural clevises.

(2) On door rear hinge.

(a) Make certain that bushes are in position on rear clevis.

(b) Install spacers (3) and (4).

(c) Grease pin (5) with Product No.051.

(d) Install pin (5), washer (2).

(e) Screw on nut (1) but do not torque tighten at this stage.

(3) On door front hinge.

(a) Make certain that bushes are in position on front clevis.

(b) Install spacer (9).

(c) Grease pin (10) with product No.051.

(d) Install pin (10) and washers (8) and (7) respectively.

(e) Install nut (6).

(4) Torque nuts (1) and (6) to between 50 and 60 lbf.in. (0.5 and 0.7 m.daN) and safety with cotter pins.

(5) Install rod fork end-fitting (14) on door swivel-end lug (17).

(a) Grease pin (18) with product No.051.

(b) Install pin (18), washer (16), and nut (15).

(c) Tighten nut (15) and safety with cotter pin.

(6) Connect bonding jumper

(7) Install seal holder (11) assembly.

(a) Attach seal holder (11) with screws (13).

(b) Install seal (12) in groove.

(8) Make certain that working area is clean and clear of

tools and miscellaneous items of equipment.

(9) Remove safety sleeves.

(10) Remove access platform.

(11) Remove safety clips and tags and reset circuit breakers

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(14) Close gear doors by means of operating handle located on nose gear leg. Install locking cap.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Adjustment/Test

Adjust door (Ref. 32-22-12, Adjustment/Test).

G. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove warning notice from flight compartment.

SECONDARY DOORS - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Adjustment after replacement.

2. Secondary Doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183 621 lbf.)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter-Lifting, LH	D924008000
Pyramid Adapter-Lifting, RH	D924008001
Jacking Pad-Nose	D925370000

DESCRIPTION	PART NO.
Safety Sleeve - Nose Landing Gear Doors	E925002000
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH 398E
Safety Barriers	
Circuit Breaker Safety Clips	
Safety Stay	

**ON A/C ALL

Lockwire - Dia. 1 mm (0.041 in.) (Corrosion Resistant Steel)	
Access Platform 3.22 m (10 ft.7 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Position safety barriers.

(6) Make certain that visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(8) Connect hydraulic ground power unit to Green hydraulic system.

(9) Pressurize Green hydraulic system (Ref. 29-11-00,

Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(10) On First Officer's instrument panel, position landing gear Normal control lever in DOWN position.

(11) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(15) Display a warning notice in the flight compartment

(16) Install safety sleeves on gear door actuating jacks.

(17) Not applicable.

(18) Not applicable.

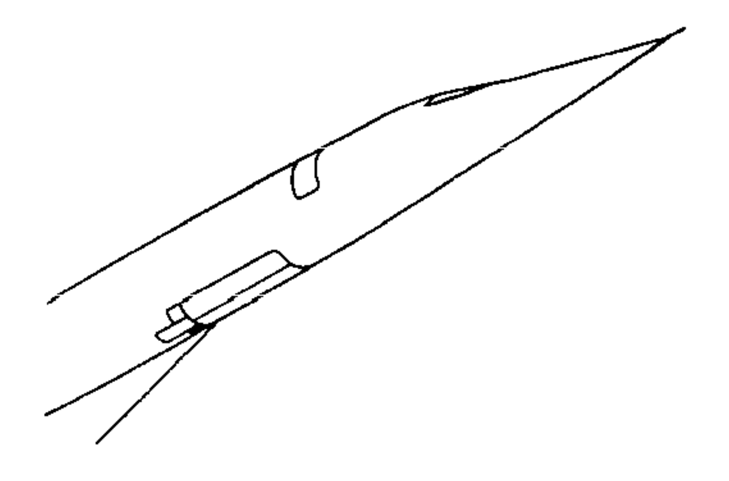
C. Adjust

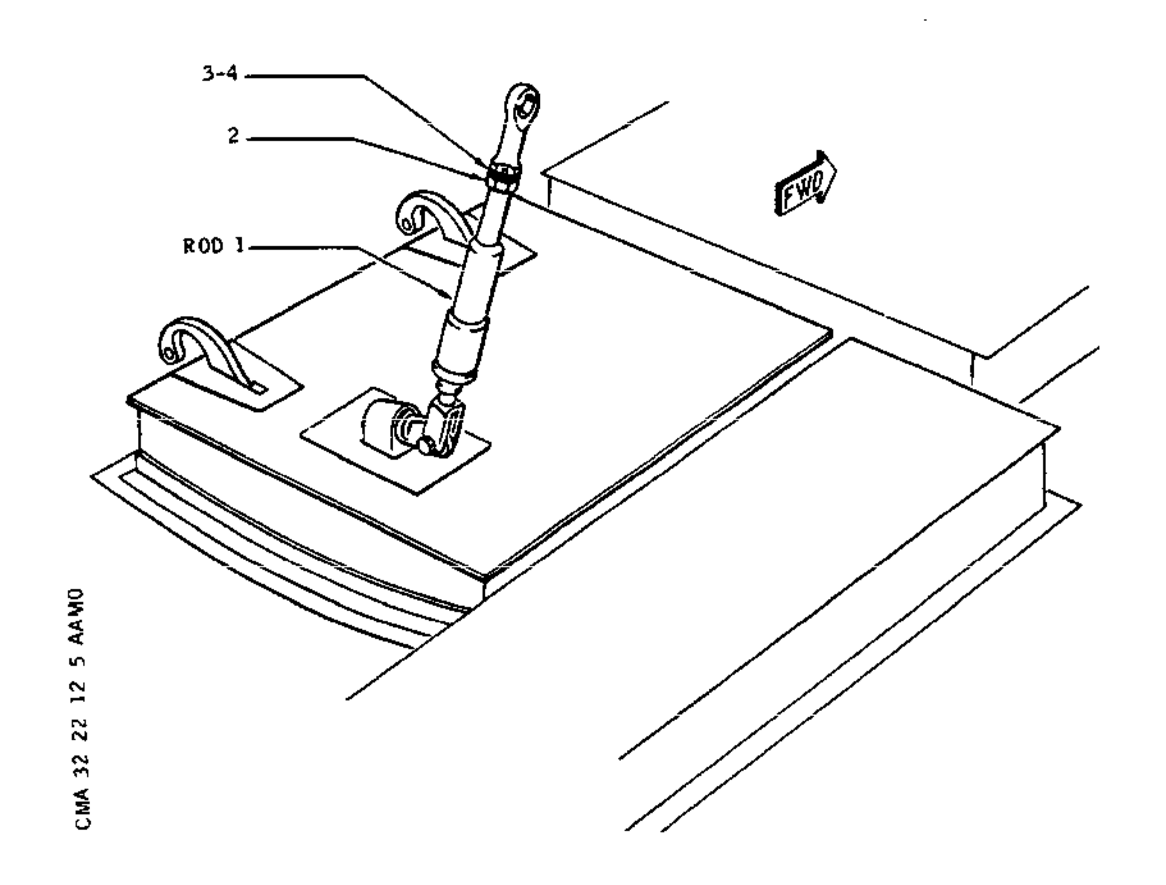
(1) On rod (1), cut and remove lockwire, loosen nut (2) and disengage lockwashers (3) and (4).
Extend rod by 10 mm (0.39 in.).

(2) Remove safety clips and tags and reset circuit breakers

(3) Remove landing gear and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.





Secondary Door Adjustment
Figure 501

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) On First Officer's instrument panel, place landing gear Normal control lever in UP position. Operate hydraulic ground power unit delivery to obtain a slow gear retraction.

(6) With gear uplocked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) Bring secondary door flush with fuselage surface by adjusting rod length.

NOTE : Secondary door permitted step in relation to fuselage surface (on same side as door 127BB or 128BB) is between + 0.060 in. and - 0.020 in. (+ 1.5 mm and - 0.5 mm).

(9) Check clearance between secondary door and fuselage surface (on same side as door 127BB or 128BB).

MINIMUM CLEARANCE 0.05 in. (1.3 mm)
MAXIMUM CLEARANCE 0.15 in. (3.8 mm)

(10) Check clearance between secondary door and drag strut door.

MINIMUM CLEARANCE 0.05 in. (1.3 mm)
MAXIMUM CLEARANCE 0.15 in. (3.8 mm)

(11) Check step between secondary door and drag strut door.

MAXIMUM STEP 0.10 in. (2.5 mm)

(12) Check clearance between secondary door on hinge side and fuselage surface on structure side.

MINIMUM CLEARANCE 0.18 in. (4.5 mm)
MAXIMUM CLEARANCE 0.30 in. (7.5 mm)

(13) Check step between secondary door on hinge side and fuselage surface on structure side.

NOTE : Secondary door permitted step in relation to surface is between 0 and - 0.12 in. (0 and

- 3 mm).

(14) Position lockwashers (3) and (4) and tighten nut (2). Torque nut to between 80 and 100 lbf.in. (0.9 and 1.2 m.daN). Safety nut (2) with lockwire (Ref. 20-21-13).

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(16) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(17) With gear downlocked, on First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(18) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(20) Not applicable.

(21) Remove safety sleeves.

(22) Remove safety clips and tags and reset circuit breakers.

(23) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(24) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(25) Close gear doors by operating handle located on nose gear leg. Install locking cap.

(26) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(27) With gears uplocked and doors closed and locked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(28) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(29) Trip, safety and tag the following circuit breakers.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(30) Check clearance between main door and replacement secondary door.

MINIMUM CLEARANCE 0.08 in. (2 mm)
MAXIMUM CLEARANCE 0.22 in. (5.6 mm)

(31) Check step between main door and secondary door.

NOTE : Secondary door permissible step in relation to main door is between + 0.020 in. and - 0.060 (+ 0.5 mm and - 1.5 mm).

(32) Remove safety clips and tags and reset circuit breakers

(33) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(34) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(35) With gear downlocked, shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(36) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(37) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (Gears downlocked).

(38) Install landing gear and shortening mechanism safety devices.

D. Test

Not applicable.

E. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove safety barriers and make certain that the area under the aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

(6) Remove warning notice from flight compartment.

DRAG STRUT DOOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The drag strut door is attached under telescopic drag strut via four rods. Two link rods, hinged at one end on the aircraft structure and at the other on the two upper drag strut door rods, serve to restore the fuselage profile, when the nose landing gear is uplocked.
With nose gear uplocked and drag strut door closed, the main doors bear on two stops mounted at the front of the drag strut door.

2. Drag Strut Door

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter, LH	D921485000

DESCRIPTION	PART NO.
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter Lifting, LH	D924008000
Pyramid Adapter Lifting, RH	D924008001
Jacking Pad-Nose	D925370000
Safety Stay	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Access Platform 3.22 m (10 ft. 7 in.)	
Safety Barriers	
Circuit Breaker Safety Clips	
Safety Sleeve-Nose Landing Gear Doors	E925002000
**ON A/C ALL	
Lockwire - 0.7 mm (0.028 in.) (Corrosion Resistant Steel)	
Snapwire Dia. 0.50 mm (0.020 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Install safety stay.

(5) Position safety barriers.

(6) Make certain that the visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(8) Connect hydraulic ground power unit to Green hydraulic system.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(11) Remove locking cap and open doors by operating handle located on nose gear leg.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Trip, safety and tag the following circuit breakers

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(15) Display a warning notice in the flight compartment.

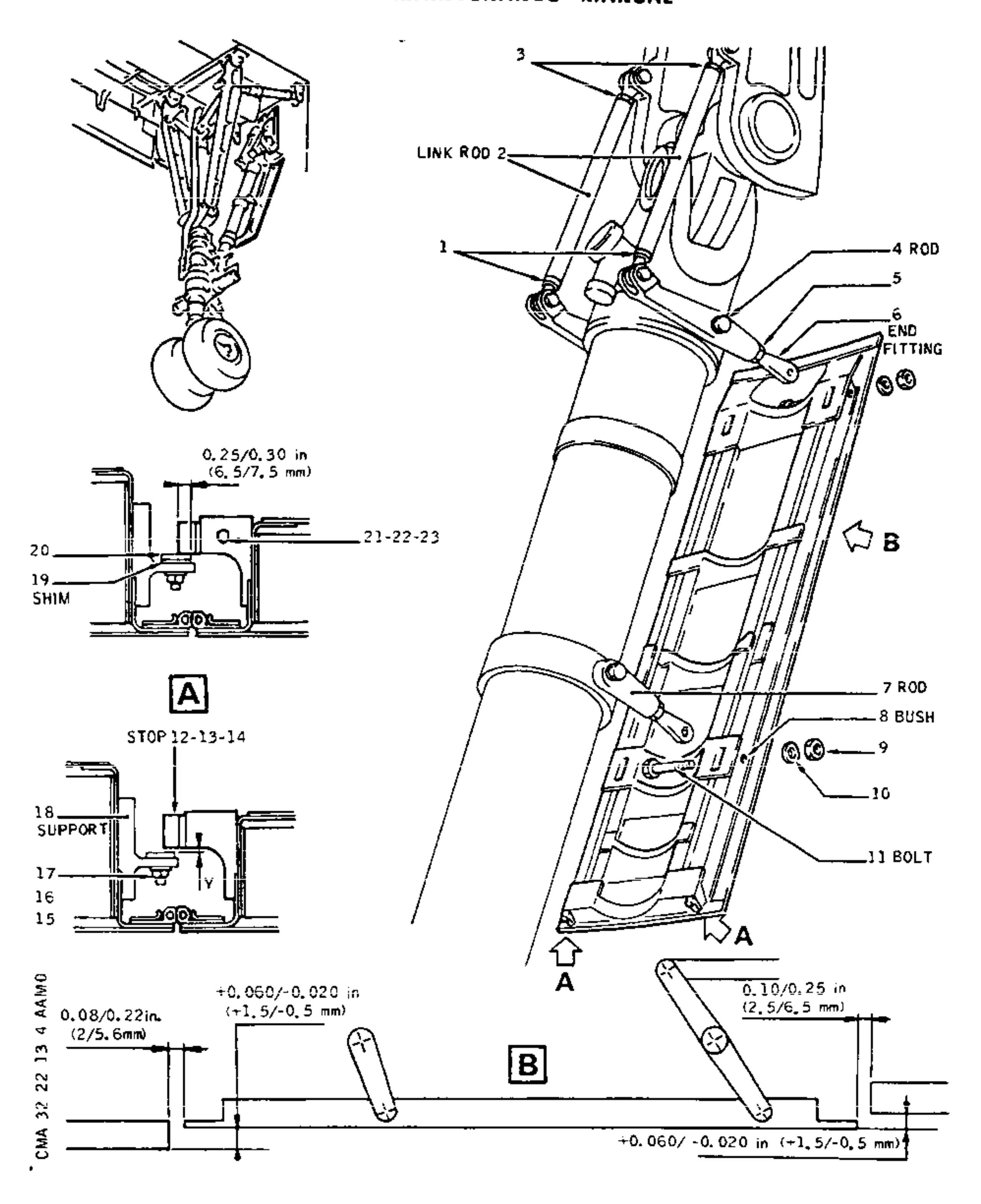
(16) Install safety collars on gear door jacks.

(17) Not applicable.

C. Remove

(1) Cut and remove lockwire and loosen nuts (5) on rods (4) and (7).

(2) Uncouple drag strut door rods (4) and (7). Retain bolts (11), washers (10) and nuts (9) for reinstallation.



Drag Strut Door
Figure 401

D. Preparation of Replacement Component

(1) On removed door

(a) Remove bushes (8).

(b) Remove and retain bolts (21), washers (22) and nuts (23). Remove stops (12), washers (13), and spacer washers (14).

(2) On replacement door

(a) Install bushes (8) at attachment points.

(b) Install stops (12) with washers (13) and spacer washers (14). Secure with bolts (21) washers (22) and nuts (23).

NOTE : Do not install cotter pins at this stage.

E. Install

(1) Screw out rod (4) and (7) end fittings (6) up to safety holes.

NOTE : Make certain that bushings are in position on end fittings.

(2) Install door ; insert rod (4) and (7) end-fittings (6) together with bushes (8) into corresponding housings.

(3) Install bolts (11), washers (10) and nuts (9). Do not fully tighten at this stage.

(4) Remove landing gear and shortening mechanism safety devices.

(5) Not applicable

(6) Remove safety clips and tags and reset circuit breakers

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(8) On First Officer's instrument panel, place landing gear Normal control lever in UP position. Operate hydraulic ground power unit delivery to obtain a slow gear retraction.

(9) With landing gear uplocked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(12) Measure step between drag strut door and fuselage skin, on one hand, and drag strut and secondary doors on the other. Note values.

(13) Measure gap between door and fuselage skin aft of door.

(14) Remove safety clips and tags and reset circuit breakers

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(16) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(17) With landing gear downlocked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) Install landing gear and shortening mechanism safety devices.

(20) Trip, safety and tag the following circuit breakers :

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SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(21) Screw rod end fittings (6), according to values noted in paragraph (11) to bring door flush.

NOTE : Permissible step between rear of drag strut door with respect to skin is between + 0.060 in. and - 0.020 in. (+ 1.5 mm and - 0.5 mm).

Maximum step between drag strut door and adjacent edges of secondary doors is 0.10 in. (2.5 mm).

(22) If necessary, cut and remove lockwire and loosen nuts (1) and (3). Rectify, clearance between rear of door and skin by adjusting length of link rods (2). Clearance shall be between 0.10 in. and 0.25 in. (2.5 and 6.5 mm).

(23) Tighten and wirelock nuts (1), (3) and (5) (Ref. 20-21-13). Safety nuts (9) with cotter pins.

(24) Disconnect the two nose gear main door jacks and hold doors open.

WARNING : SUPPORT THE TWO JACKS DURING THE FOLLOWING OPERATIONS.

(25) On main doors, remove shims (19) between mating plates (20) and their supports (18).
Temporarily re-install plates with screws (15), washers (16) and nuts (17). Tighten without locking.

(26) Remove safety clips and tags and reset circuit breakers

(27) Remove landing gear and shortening mechanism safety devices.

(28) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(29) On First Officer's instrument panel, place landing gear Normal control lever in UP position.
Operate hydraulic ground power unit delivery to obtain a slow gear retraction.

(30) With landing gear uplocked, on First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(31) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(32) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(33) Manually close LH main door.
Check that the two landing gear main door uplocks are "locked closed".

(a) Make certain that clearance between rear of main door and front of drag strut door is between 0.08 and 0.22 in. (2 and 5.6 mm).

(b) Check step between main door and front of drag strut door.

NOTE : Permissible step of main door with respect to front of drag strut door is between + 0.060 in. and - 0.020 in. (+ 1.5 mm and - 0.5 mm).

(c) Measure "y" clearance between stop (12) and bearing plate (20).

(d) Adjust shim (19) to "y" dimension.

(e) Check that plate overlaps stop (12) by between 0.25 in. and 0.30 in. (6.5 and 7.5 mm).

(f) If adjustment is necessary by removing or adding spacer washers (14), open door :

- Remove nut (23), washer (22), bolt (21) and remove stop.
- Discard stop.
- Carry out adjustment with replacement stop.
- Drill a hole in stop rod in line with support holes, with drill Dia. 0.190 in. (4.8 mm).
- Attach stop on support with bolt (21), washer (22) and nut (23). Safety with cotter pin.

(g) In passenger compartment open access door 221RF.

WARNING : ON NOSE GEAR UPLOCK DISCONNECT ULTIMATE EMERGENCY EXTENSION ACTUATING ROD AT THE UPPER END. DOORS SHALL BE RESTRAINED DURING OPENING TO AVOID DAMAGE TO DOORS AND STRUCTURE.

(h) Open nose gear main doors using Ultimate Emergency control.
Remove locking pin.
Install wheel on unlocking control shaft.
Slowly turn wheel until door uplock release.
With doors fully open, restore Ultimate Emergency control to original configuration.
Remove wheel and install it on its bracket.
Install locking pin.
Safety locking pin with snapwire (Ref. 20-26-13) and seal.
Close access door 221RF.

(i) Remove plate temporarily attached to support.

(j) Position shim (19) adjusted to "y" dimension.

(k) Attach plate (20) and shim (19) on support with screws (15), washers (16) and nuts (17).

(l) Reconnect Ultimate Emergency extension actuating rod.

(34) Repeat operations described in paragraph (32) on RH main door.

(35) Connect nose gear main door jacks.

(36) Not applicable.

(37) Remove safety sleeves.

(38) Remove safety clips and tags and reset circuit breakers

(39) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : CHECK THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(40) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(41) Close doors by operating handle located on nose gear leg. Install locking cap.

(42) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(43) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : ON FIRST OFFICER'S INSTRUMENT PANEL, MAKE CERTAIN THAT THE FOUR GREEN ARROWS ON GEARS POSITION INDICATING UNIT ARE ILLUMINATED (GEARS DOWNLOCKED).

(44) Install landing gear and shortening mechanism safety devices.

F. Test

Carry out a landing gear Normal retraction and extension. (Ref. 32-31-00, Adjustment/Test).

G. Close-Up

(1) Remove access platform.

(2) Shut down and disconnect hydraulic ground power unit.

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Remove safety barriers and make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(5) Remove safety stay.

(6) Lower aircraft onto its wheels.

(7) Remove warning notice from flight compartment.

EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General

Power required for landing gear operation is provided by the Green or Yellow hydraulic system.
Nose and main landing gears operate simultaneously in conjunction with main door opening.

A. Normal Extension and Retraction
(Ref. Fig.001 and 002)
(Ref. Fig.003 and 004)

(1) Normal extension and retraction of landing gear is controlled by a lever-operated switch located on the First Officer's instrument panel.
This electrical control acts directly on the main and nose gear door electrovalve solenoids. The door open position enables the landing gear selectors to be energized. The doors close when the landing gears are downlocked.

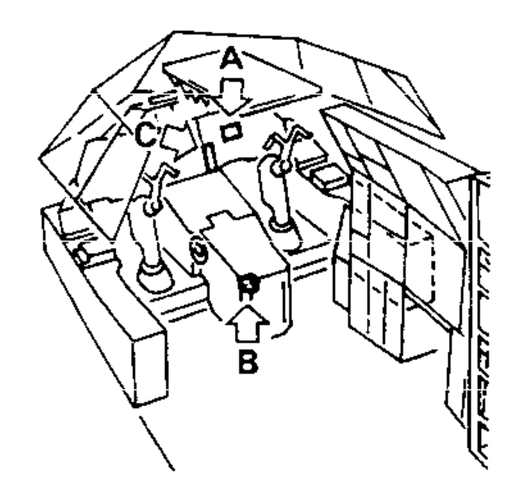
(2) Landing gear extension is dependent on the position of the visor and is controlled by an electro-hydraulic safety system. Hydraulic power is provided by the Green system.

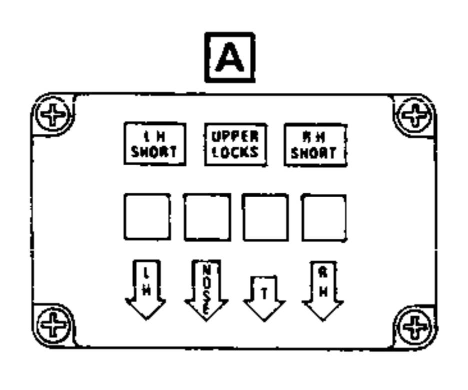
B. Opening of Doors on Ground

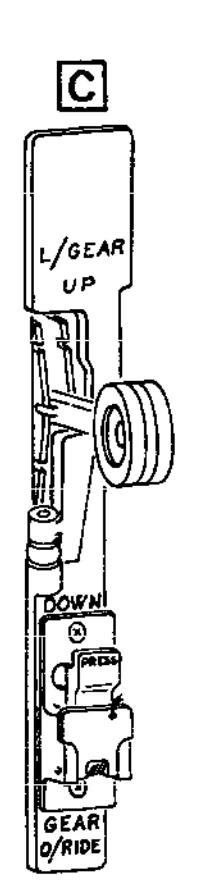
Operation of handle, incorporated in each of the landing gear door ground opening control units installed on the nose gear leg and LH main gear leg, serves for independent opening of the associated main doors.

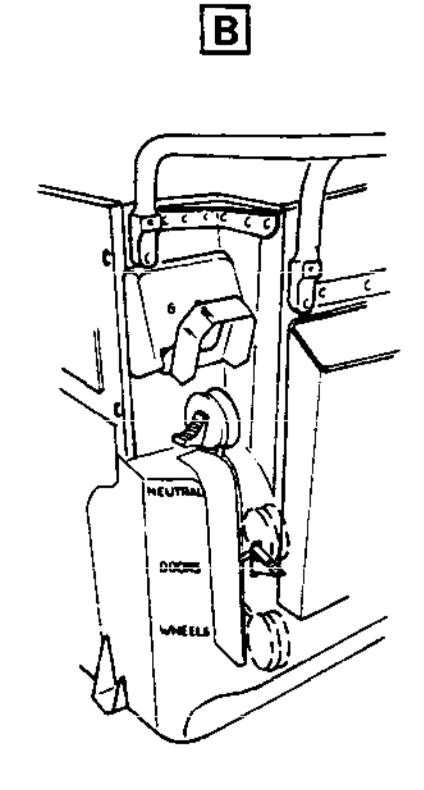
C. Emergency Extension
(Ref. Fig. 001, 003 and 004)

(1) In the event of failure of the Normal system, a lever located on the left hand side of the centre console mechanically controls the door and gear emergency selector which is supplied by the Yellow hydraulic system.









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Controls and Indicating - Location
Figure 001

2. Description

The main units supplied by Green system during Normal gear extension and retraction are as follows :

A. Two safety electrovalves: (G31, G32)

The safety electrovalves prohibit landing gear retraction if the shock absorbers are compressed (aircraft on ground) and landing gear extension if the visor is uplocked. They isolate the landing gear Normal extension system if one of the ram air turbine uplock release control switches is in ON or TEST position.

(1) Main gear safety electrovalve (G31) located in Zone 151-152 is accessible through door 151DB.

(2) Nose gear safety electrovalve (G32) located in the nose gear bay, LH side.

B. Two door selectors: (G29, G30)

The two selectors deliver control pressure to gear doors and ensure return to tank.

(1) Nose gear door selector (G29) is located in the nose gear bay, LH side.

(2) Main gear door selector (G30), located in Zone 151-152, is accessible through door 151DB.

C. An actuating jack for each door :

- (3404, 3405) main gear main doors,
- (3502, 3503) nose gear main doors.

D. Six Door Uplocks: (0408, 0409, 3506, 3507, 3508, 3509)

Uplocking is mechanical, uplock release is hydraulic or mechanical.

Each door uplock includes an uplock release jack which serves for uplock release of gear doors during Normal and Emergency operation and an Ultimate Emergency mechanical door opening control.

(1) An uplock (0408, 0409) for each main gear main door.

(2) Two uplocks (3506, 3508) for nose gear LH main door.

(3) Two uplocks (3507, 3509) for nose gear RH main door.

E. A Timing Valve for Each Door :

- (533, 534) nose gear doors,
- (429, 430) main gear doors.

F. Three Gear Selectors: (G26, G27, G28)

The selectors deliver control pressure to landing gear and ensure return to tank.

(1) A nose gear selector (G26) located in nose gear bay, LH side.

(2) A main gear selector (G27) located in zone 151-152 which is accessible through door 151DB.

(3) A tail gear selector (G28) located in tail gear bay.

G. An Actuating Cylinder for Each Gear : (3402, 3403, 3500, 3501, 1318)
These actuating cylinders include built-in end-of-travel restriction.

(1) Two actuating cylinders (3500, 3501) are installed in parallel and operate the nose gear.

(2) Each main landing gear actuating cylinder (3402, 3403) includes a pressure relief valve (5122, 5123) installed at and connected into the actuating cylinder retraction side.
The pressure relief valves smooth out pressure peaks at start of cylinder extension under high load factor.

(3) Tail gear actuating cylinder (1318) actas as a strut and includes an internal locking mechanism at each end. Lock release is hydraulic.

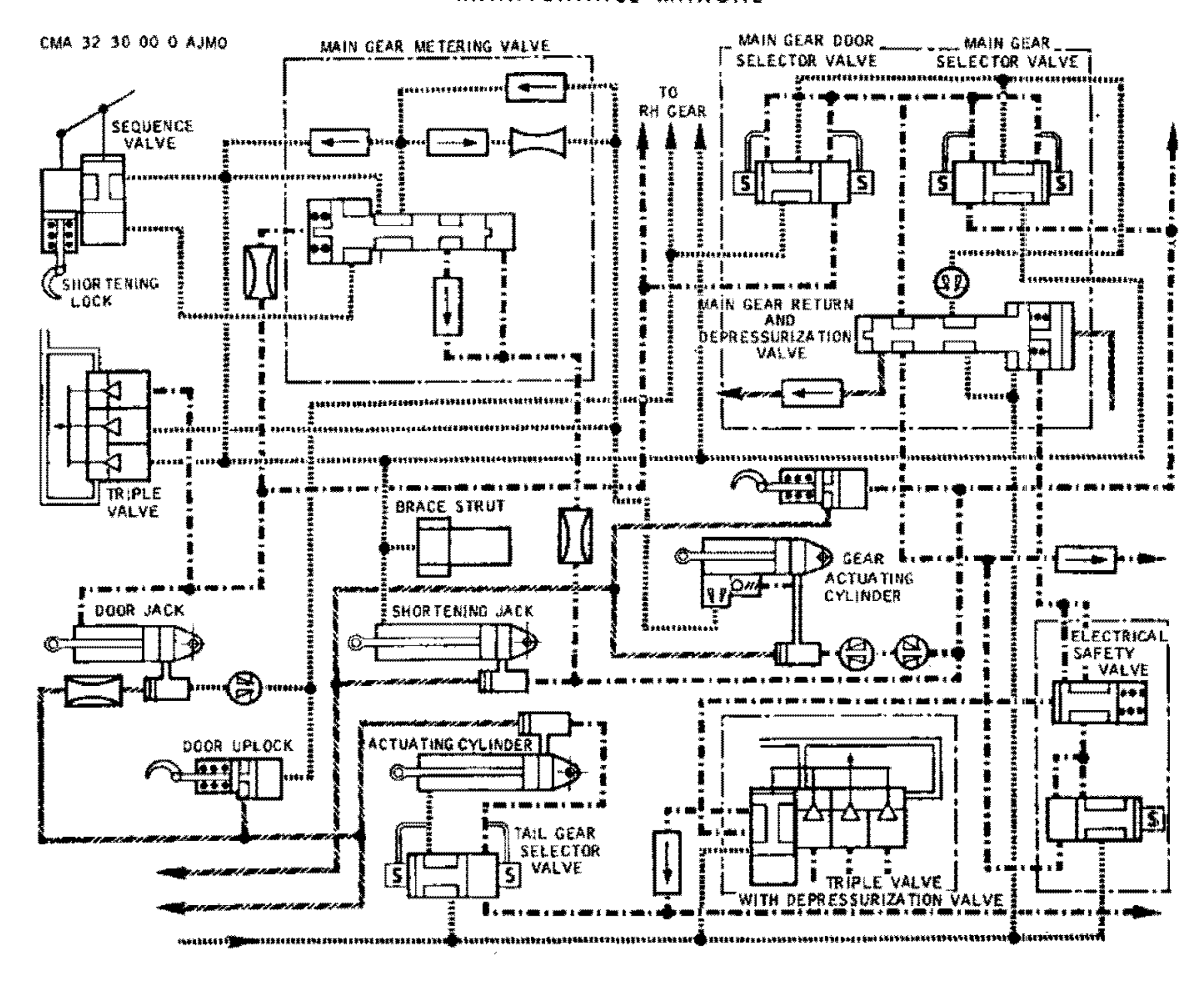
H. A Nose Gear Telescopic Drag Strut (3513) and Main Gear Telescopic Brace struts (3413, 3414).

(1) The nose gear telescopic drag strut and main gear telescopic brace struts serve for gear downlocking.

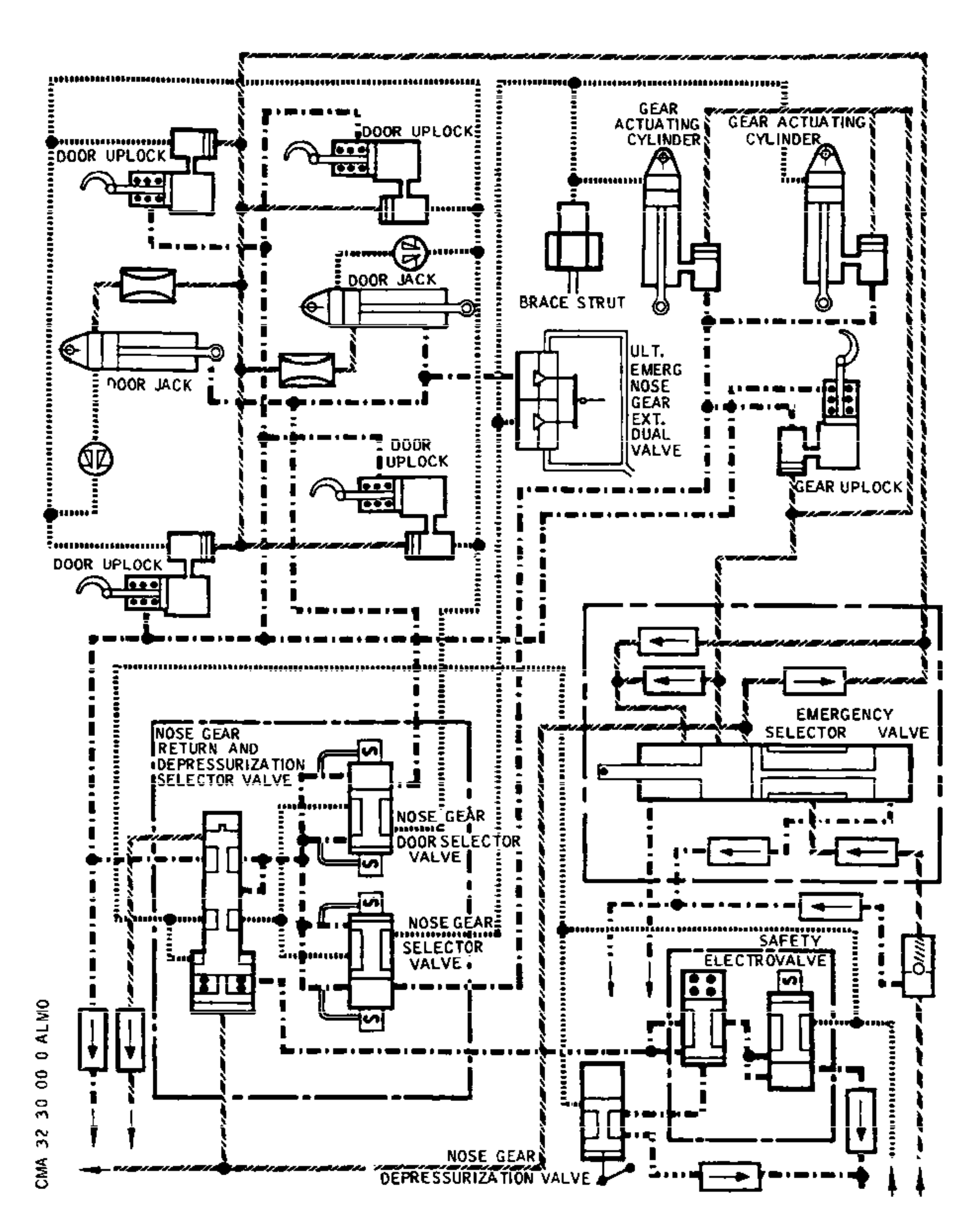
(2) Downlocking is mechanical. Downlock release is hydraulic.

I. An Uplock for Each Gear : (3406, 3407, 3504)

(1) Uplocking is mechanical, uplock release is hydraulic or mechanical.



Main Landing Gear Hydraulic System
Figure 003



Nose Landing Gear Hydraulic System
Figure 004

(2) Under Emergency control only door opening and gear extension sequences are assured.

D. Ultimate Emergency Extension (Ref. Fig. 005)

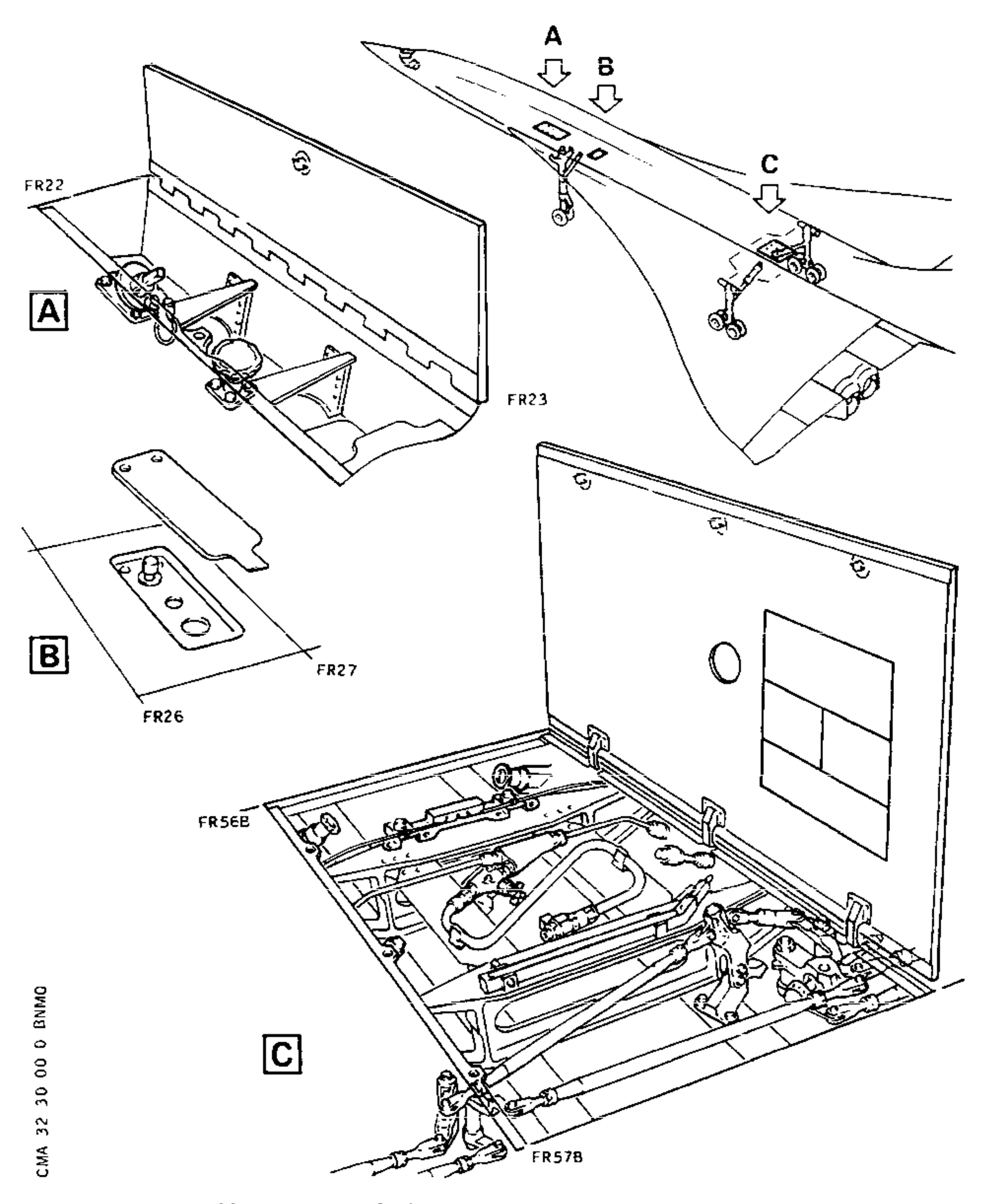
In an ultimate emergency, two mechanical controls, one for the nose landing gear, the other for the main landing gear provide uplock release of the gears.
The tail gear is not extended.

E. Indicating (Ref. Fig. 001)

An electrical gears position indicating unit located on the First Officer's instrument panel indicates, by means of indicator lights, operation and position of landing gears and doors.

F. Optical Downlocking Check (Ref. Fig. 005)

In the event of failure of the gears position indicating unit, main and nose gear downlocking can be checked through downlocking sighting windows located at two points in the passenger compartment.



Landing Gear Ultimate Emergency Extension
Location of Controls and Downlocking Sighting Windows
Figure 005

EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General

Power required for landing gear operation is provided by the Green or Yellow hydraulic system.
Nose and main landing gears operate simultaneously in conjunction with main door opening.

A. Normal Extension and Retraction
(Ref. Fig. 001, 002 and 003)

(Ref. Fig. 004)

After SB 32-088

(Ref. Fig. 005)

(1) Normal extension and retraction of landing gear is controlled by a lever-operated switch located on the First Officer's instrument panel.
This electrical control acts directly on the main and nose gear door electrovalve solenoids. The door open position enables the landing gear selectors to be energized. The doors close when the landing gears are downlocked.

(2) Landing gear extension is dependant on the position of the visor and is controlled by an electro-hydraulic safety system. Hydraulic power is provided by the Green system.

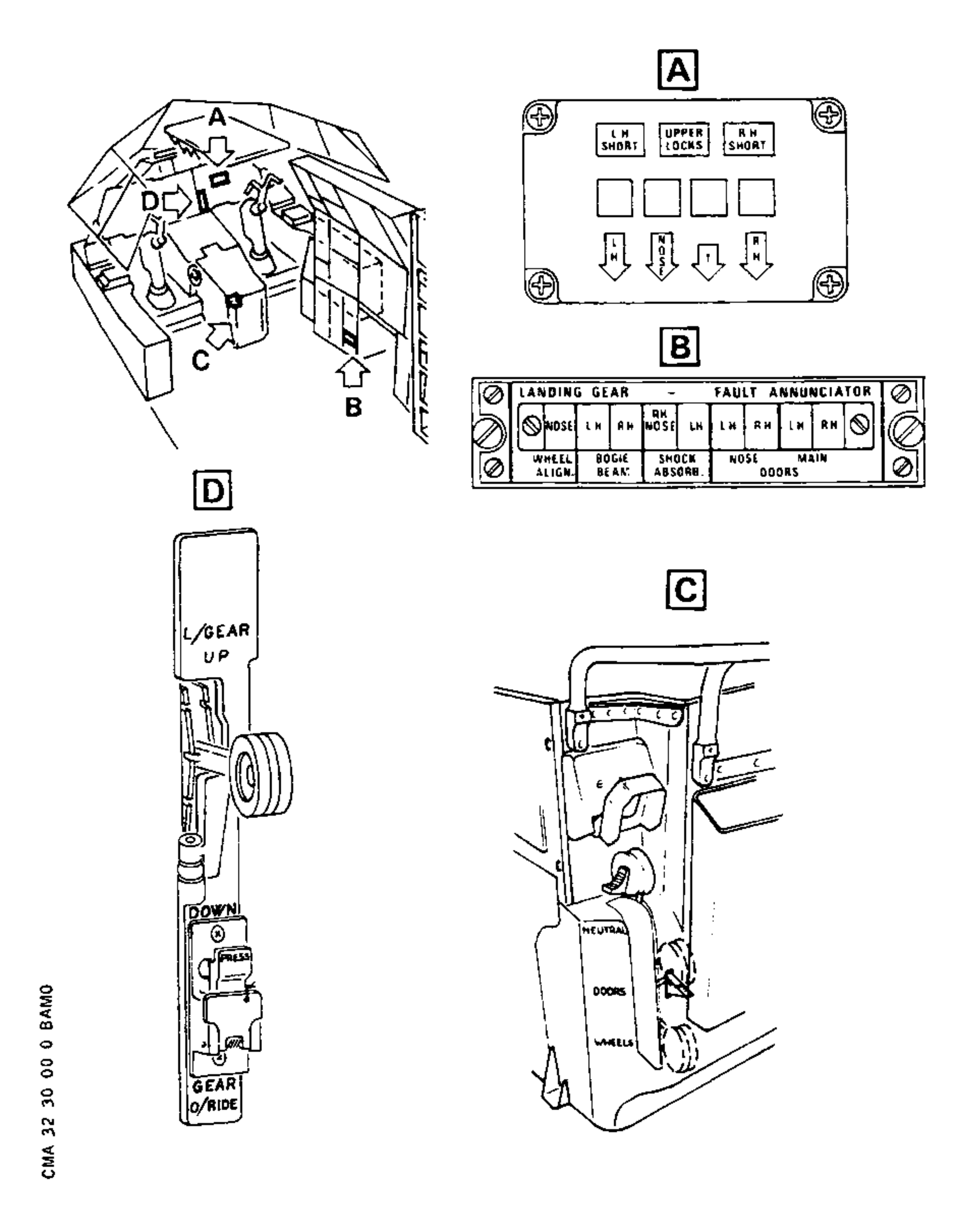
B. Opening of Doors on Ground

Operation of a handle, incorporated in each of the landing gear door ground opening control units installed on the nose gear leg and LH main gear leg, serves for independent opening of the associated main doors.

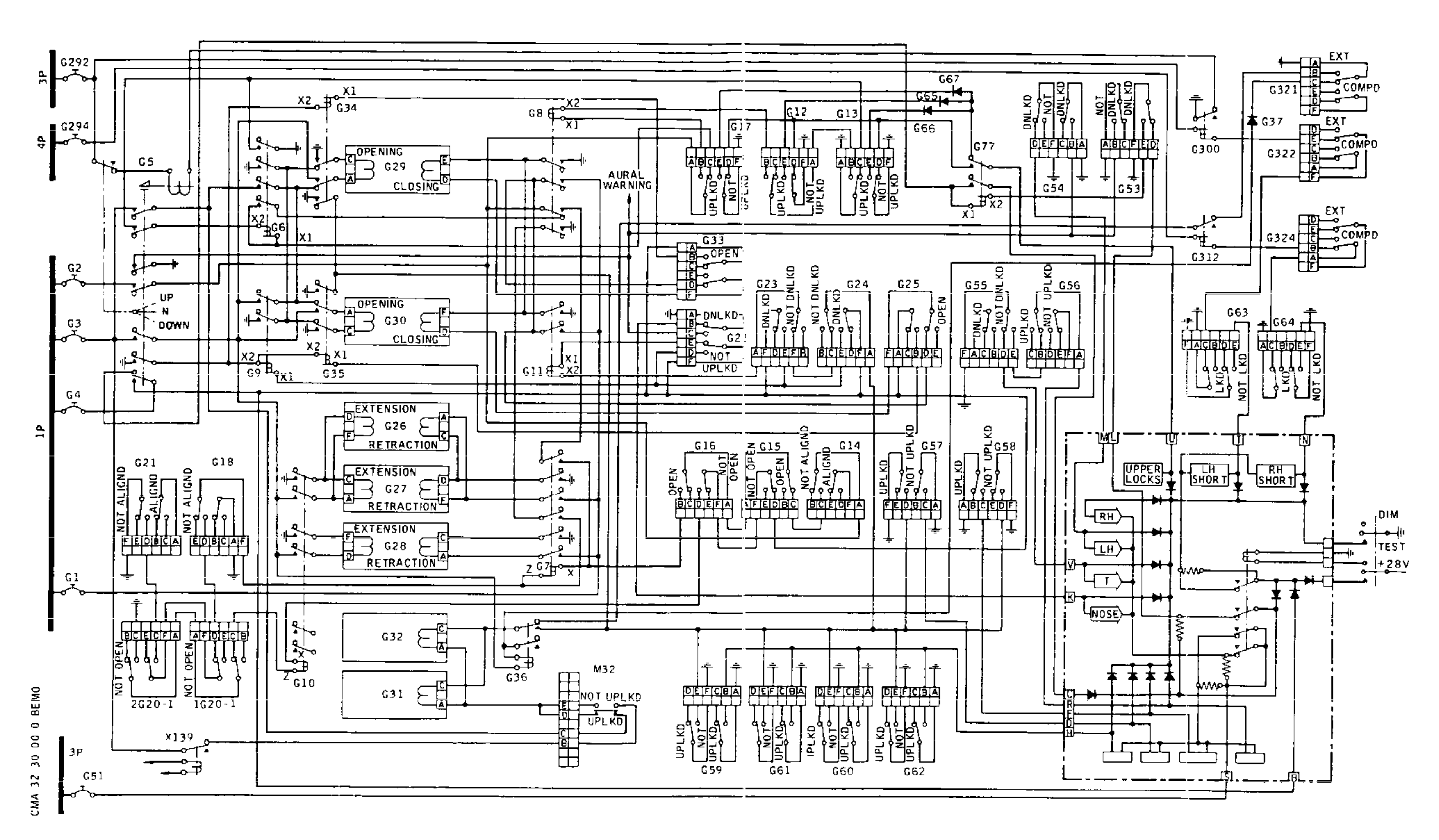
C. Emergency Extension
(Ref. Fig. 001)

(1) In the event of failure of the Normal system, a lever located on the left hand side of the centre console mechanically controls the door and gear emergency selector which is supplied by the Yellow hydraulic system.

(2) Under Emergency control, only door opening and gear extension sequence are assured.

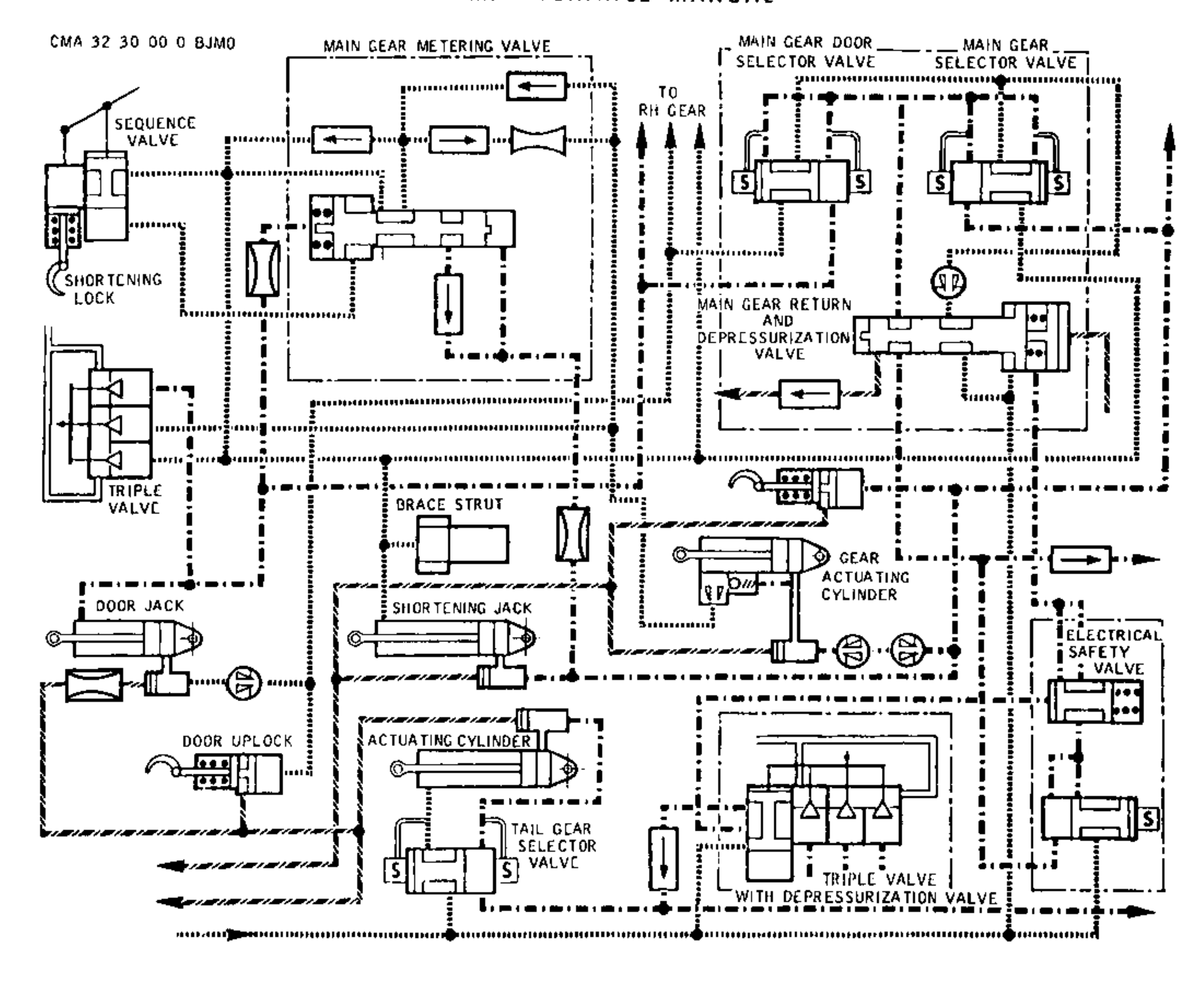


Controls and Indicating - Location
Figure 001

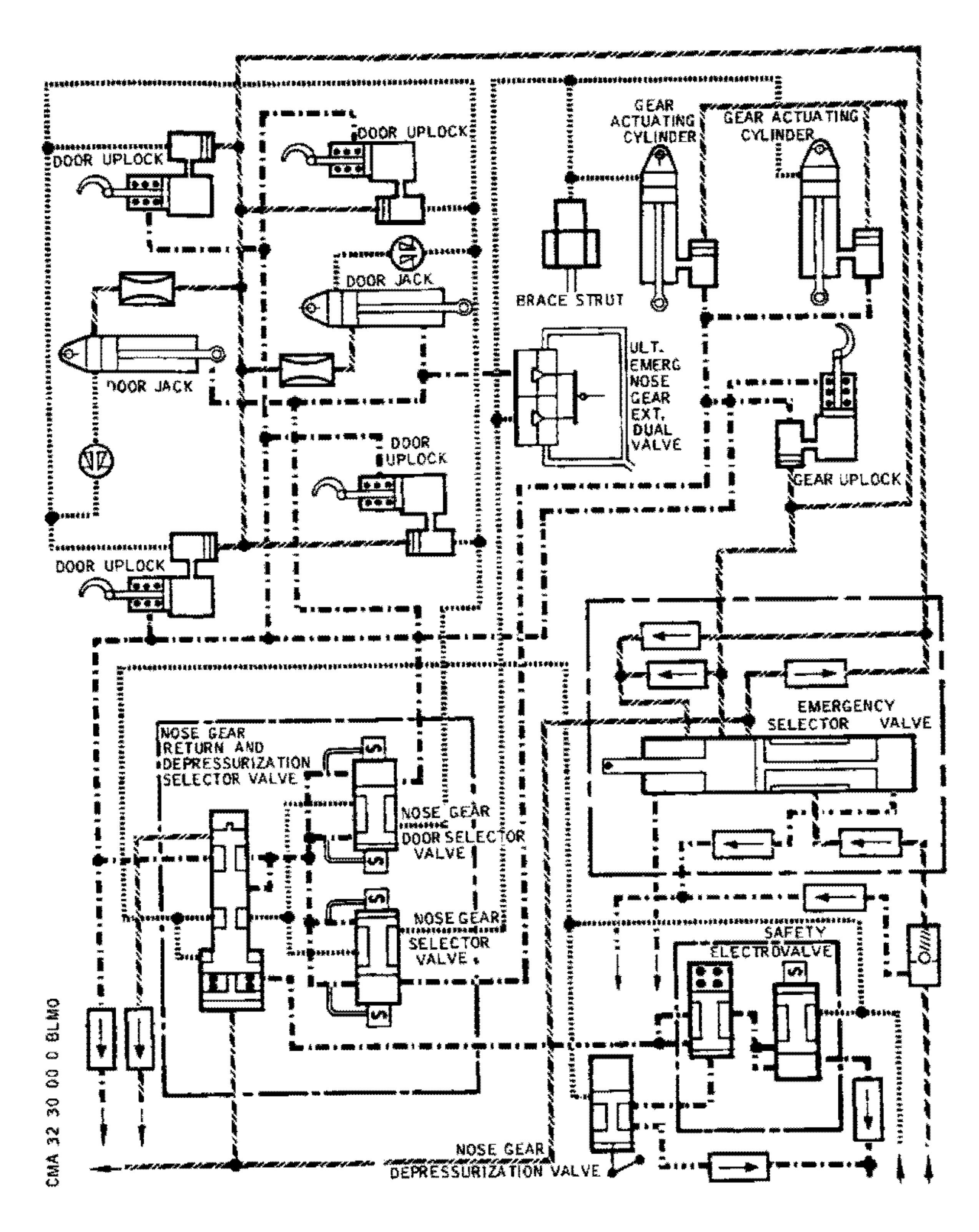


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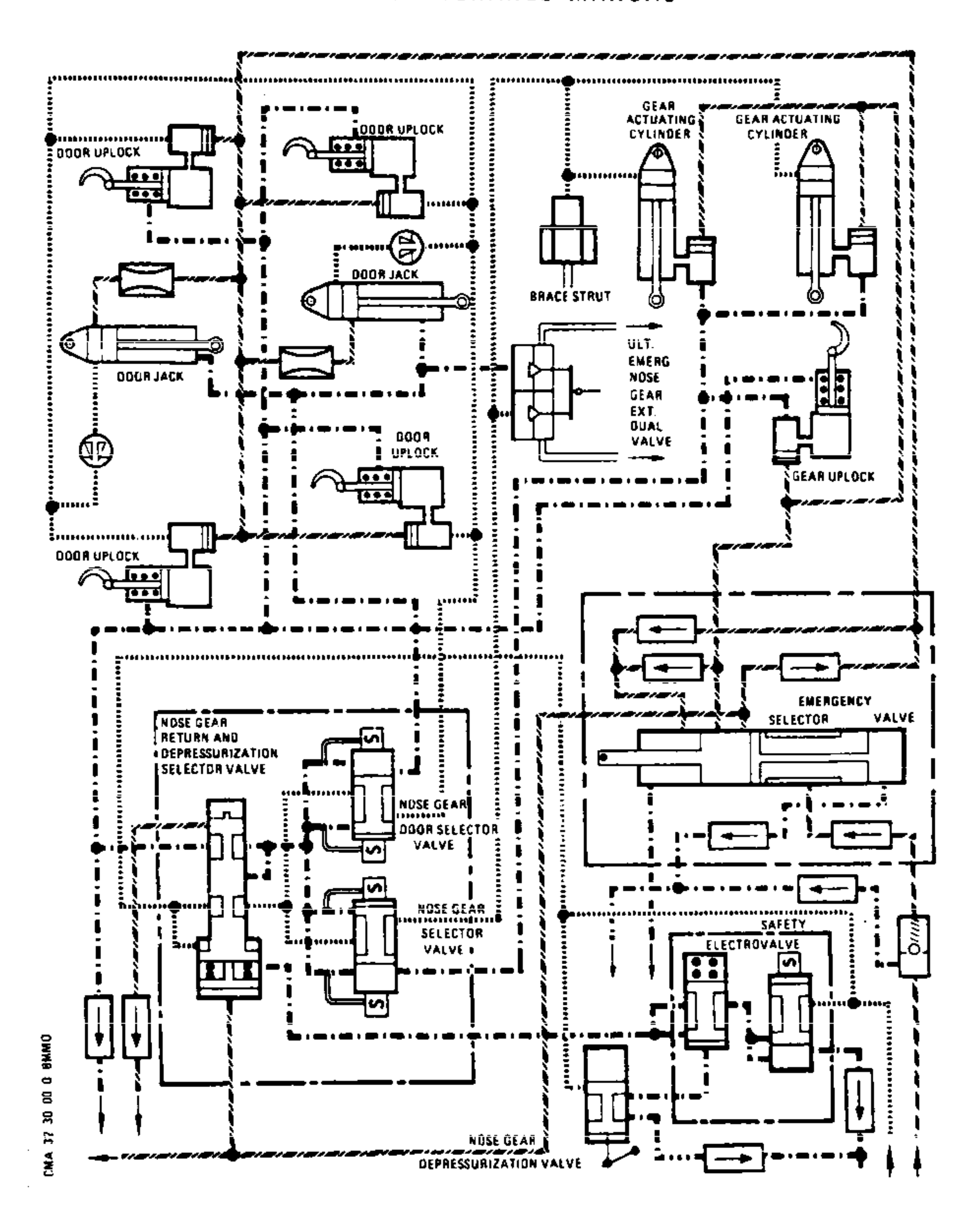
Normal Extension and Retraction -
Controls and Indicating
Figure 002



Main Landing Gear Hydraulic System
Figure 003



Nose Gear Hydraulic System
Figure 004



Nose Gear Hydraulic System
Figure 005

D. Ultimate Emergency Extension (Ref. Fig. 006)

In an ultimate emergency, two mechanical controls one for the nose landing gear, the other for the main landing gear provide uplock release of the gears.
The tail gear is not extended.

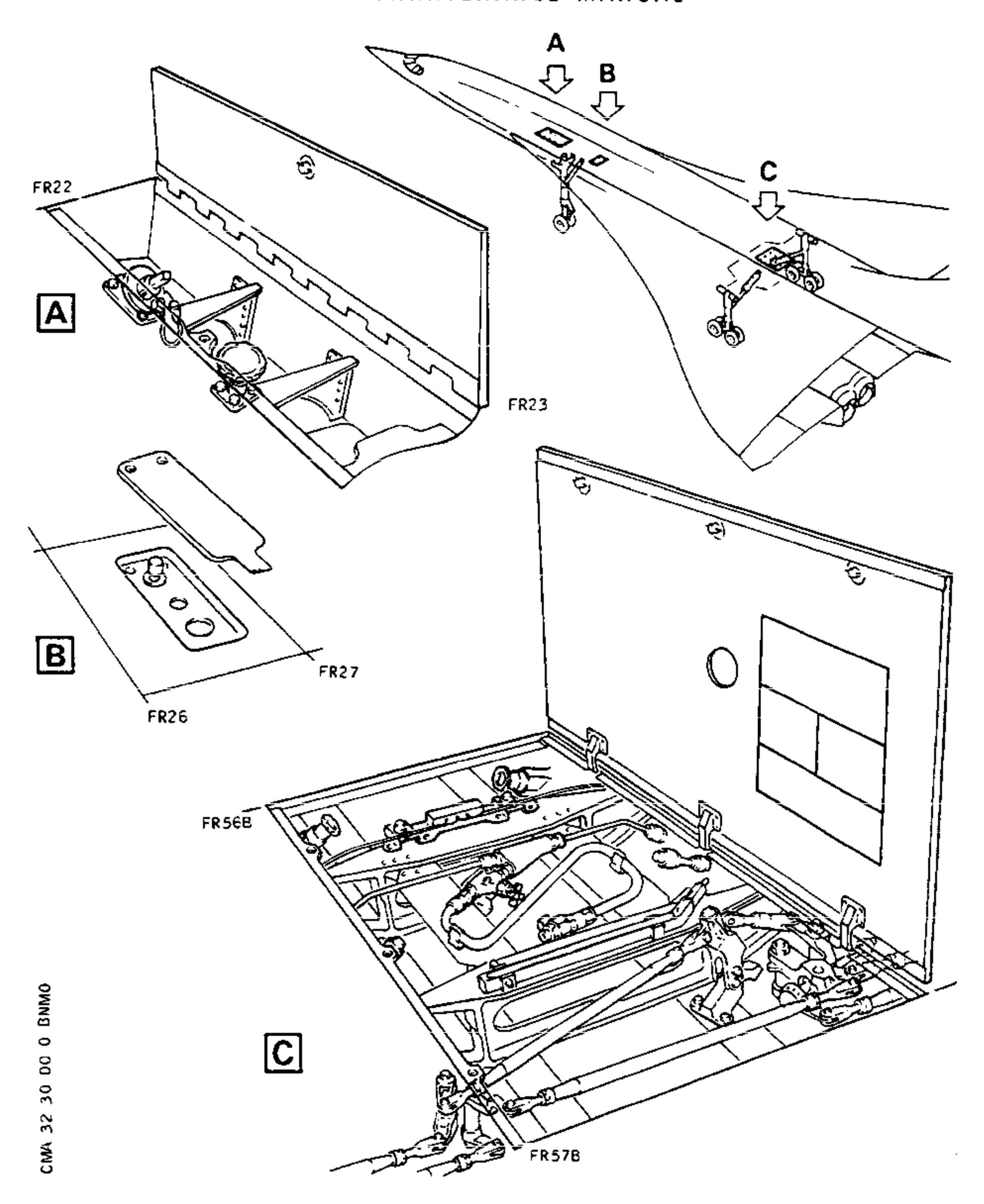
E. Indicating (Ref. Fig. 001)

An electrical gears position indicating unit located on the First Officer's instrument panel indicates, by means of indicator lights, operation and position of landing gears and doors.

A separate FAULT ANNUNCIATOR unit located on the Flight Engineer's panel indicates any anomaly in the gear retraction sequence.

F. Optical Downlocking Check (Ref. Fig. 006)

In the event of failure of the gears position indicating unit, main and nose gear downlocking can be checked through downlocking sighting windows located at two points in the passenger compartment.



Landing Gear Ultimate Emergency Extension
Location of Controls and Downlocking Sighting Windows
Figure 006

EXTENSION AND RETRACTION AFTER LANDING GEAR HYDRAULIC SYSTEM COMPONENT REPLACEMENT OR HYDRAULIC DRAINAGE - ADJUSTMENT/TEST

1. General

These checks are to purge any air from landing gear hydraulic system caused by replacement of landing gear system components or hydraulic drainage due to multiple pipe breakdowns.

R ** ON A/C 001-006

2. Functional Test

A. Carry out three Normal extension and retractions of landing gear
R (Ref. 32-31-00 Config.02, Adjustment/Test).

B. Carry out an Emergency extension of landing gear (Ref. 32-32-00,
R Adjustment/Test).

B C. Carry out an Ultimate Emergency extension of landing gear (Ref.
R 32-33-00, Adjustment/Test).

D. Carry out five Normal extension and retractions of landing gear
R (Ref. 32-31-00 Config.02, Adjustment/Test).

R ** ON A/C 007-007

R 2. Functional Test

R A. Carry out three Normal extension and retractions of landing gear
R (Ref. 32-31-00 Config.01, Adjustment/Test).

R B. Carry out an Emergency extension of landing gear (Ref. 32-32-00,
R Adjustment/Test).

R C. Carry out an Ultimate Emergency extension of landing gear (Ref.
R 32-33-00, Adjustment/Test).

R D. Carry out five Normal extension and retractions of landing gear
R (Ref. 32-31-00 Config.01, Adjustment/Test).

END OF THIS SECTION

NEXT

NORMAL EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
(Ref. Fig. 001)

A. The power required for Normal operation of the landing gear is supplied by the Green hydraulic system. Extension and retraction of landing gear is electrically controlled through switch (G5) located on First Officer's panel. The control lever of switch (G5), "Landing gear Normal control lever" can be placed in one of three positions : UP, NEUTRAL, DOWN.

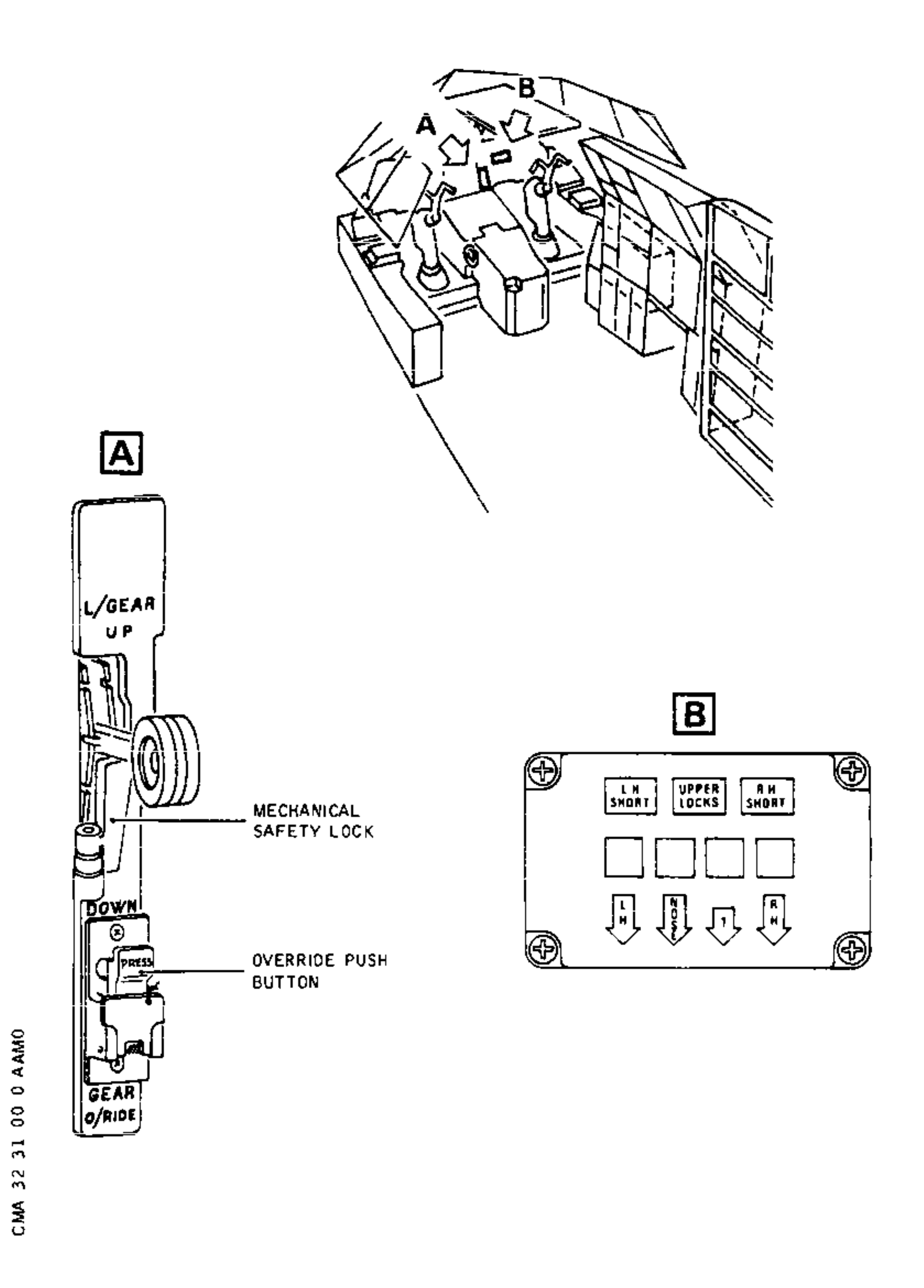
When the lever is moved from NEUTRAL position to DOWN or to UP, the solenoids on the landing gear door electro-hydraulic selectors are energized.

B. A mechanical safety stop positioned beneath the landing gear Normal control lever prevents inadvertent extension of the landing gear in flight when lever is moved from UP to NEUTRAL position.

C. On the ground, a mechanical lock prevents movement of the landing gear Normal control lever to UP position. If need be, this lock can be overridden by means of a pushbutton included in the switch unit.

D. In flight, and electro-hydraulic safety lock prevents gear extension if the visor is uplocked.

E. Gears position indicating unit (G52) located on First Officer's instrument panel includes lights which indicate the various landing gear retraction/extension phases.



Normal Extension and Retraction
Controls and Indicating
Figure 001

2. Description

The main units supplied by Green system during Normal gear extension and retraction are as follows :

A. Two safety electrovalves: (G31, G32)

The safety electrovalves prohibit landing gear retraction if the shock absorbers are compressed (aircraft on ground) and landing gear extension if the visor is uplocked. They isolate the landing gear Normal extension system if one of the ram air turbine uplock release control switches is in ON or TEST position.

(1) Main gear safety electrovalve (G31) located in Zone 151-152 is accessible through door 151DB.

(2) Nose gear safety electrovalve (G32) located in the nose gear bay, LH side.

B. Two door selectors: (G29, G30)

The two selectors deliver control pressure to gear doors and ensure return to tank.

(1) Nose gear door selector (G29) is located in the nose gear bay, LH side.

(2) Main gear door selector (G30), located in Zone 151-152, is accessible through door 151DB.

C. An actuating jack for each door :

- (3404, 3405) main gear main doors,
- (3502, 3503) nose gear main doors.

D. Six Door Uplocks: (0408, 0409, 3506, 3507, 3508, 3509)

Uplocking is mechanical, uplock release is hydraulic or mechanical.

Each door uplock includes an uplock release jack which serves for uplock release of gear doors during Normal and Emergency operation and an Ultimate Emergency mechanical door opening control.

(1) An uplock (0408, 0409) for each main gear main door.

(2) Two uplocks (3506, 3508) for nose gear LH main door.

(3) Two uplocks (3507, 3509) for nose gear RH main door.

E. A Timing Valve for Each Door :

- (533, 534) nose gear doors,
- (429, 430) main gear doors.

F. Three Gear Selectors: (G26, G27, G28)

The selectors deliver control pressure to landing gear and ensure return to tank.

(1) A nose gear selector (G26) located in nose gear bay, LH side.

(2) A main gear selector (G27) located in zone 151-152 which is accessible through door 151DB.

(3) A tail gear selector (G28) located in tail gear bay.

G. An Actuating Cylinder for Each Gear : (3402, 3403, 3500, 3501, 1318)
These actuating cylinders include built-in end-of-travel restriction.

(1) Two actuating cylinders (3500, 3501) are installed in parallel and operate the nose gear.

(2) Each main landing gear actuating cylinder (3402, 3403) includes a pressure relief valve (5122, 5123) installed at and connected into the actuating cylinder retraction side.
The pressure relief valves smooth out pressure peaks at start of cylinder extension under high load factor.

(3) Tail gear actuating cylinder (1318) actas as a strut and includes an internal locking mechanism at each end.
Lock release is hydraulic.

H. A Nose Gear Telescopic Drag Strut (3513) and Main Gear Telescopic Brace struts (3413, 3414).

(1) The nose gear telescopic drag strut and main gear telescopic brace struts serve for gear downlocking.

(2) Downlocking is mechanical. Downlock release is hydraulic.

I. An Uplock for Each Gear : (3406, 3407, 3504)

(1) Uplocking is mechanical, uplock release is hydraulic or mechanical.

(2) Each gear uplock includes an uplock release jack which serves for uplock release of gears during Normal and Emergency operation.

(3) Each uplock incorporates an Ultimate Emergency gear extension mechanical control.

J. A Shock Absorber Shortening Jack for Each Main Gear : (3420, 3421)

(1) These jacks assist during initiation of main gear movement.

K. A Shortening Lock for Each Main Gear : (3410, 3411)

(1) Installed on each main gear leg, they mechanically downlock the gear shortening system. Downlock release is hydraulic.

L. A sequence Valve on Each Shortening Lock : (4104, 4105)

(1) These valves enable main gears to be retracted as soon as the shortening lock is released.

M. A Timing Valve on Each Main Gear : (4230, 4231) located in the associated main gear bay.

(1) These valves enable uplock release to be achieved before pressure is admitted to the actuating cylinder.

N. A restrictor-check valve (0423,0424) located downstream of each timing valve ensures optimum pressurization of each extension-side chamber in each main gear actuating cylinder.

O. A Metering Valve for Each Main Gear : (4010, 4011) located in the associated main gear bay.

(1) Variable metering slows down main gear at end-of-retraction.

P. Two restrictors (5118, 5119, 5120, 5121) located at each metering valve slow down the movement of the metering valve spool during main landing gear extension.

Q. Two Return and Depressurization Selector Valves : (4012, 4014)

Theses valves located upstream of door and gear selectors are only operative during Emergency and Ultimate Emergency gear extension.

They cut off Green system pressure to the selectors, and connect selector supply and return to Yellow hydraulic tank.

NOTE : A pipe equipped with a non-return valve and a restrictor is installed between the Yellow tank return and the green tank return of each selector to prevent fluid transfer from Green hydraulic system to Yellow hydraulic system due to thermal expansion.

(1) Main gear return and depressurization selector valve (4012) located in Zone 151-152 is accessible through door 151DB.

(2) Nose gear return and depressurization selector valve (4014) is located in the nose gear bay, LH side.

3. Selectors - Main Gear and Door (G27, G30)
(Ref. Fig. 002)

A. General

The main gear and main gear door selectors are identical. They are both electrically remote controlled.
The main gear door selector which is supplied with Green system pressure serves for main gear door opening and closing. The main gear selector which is supplied with Green system pressure serves for main gear extension and retraction.

NOTE : The restrictor check valve (5130) serves to prevent untimely uplock release of the gear doors during depressurization of the landing gear hydraulic system following selection of landing gear normal control lever to neutral position (following landing gear retraction).

B. Description

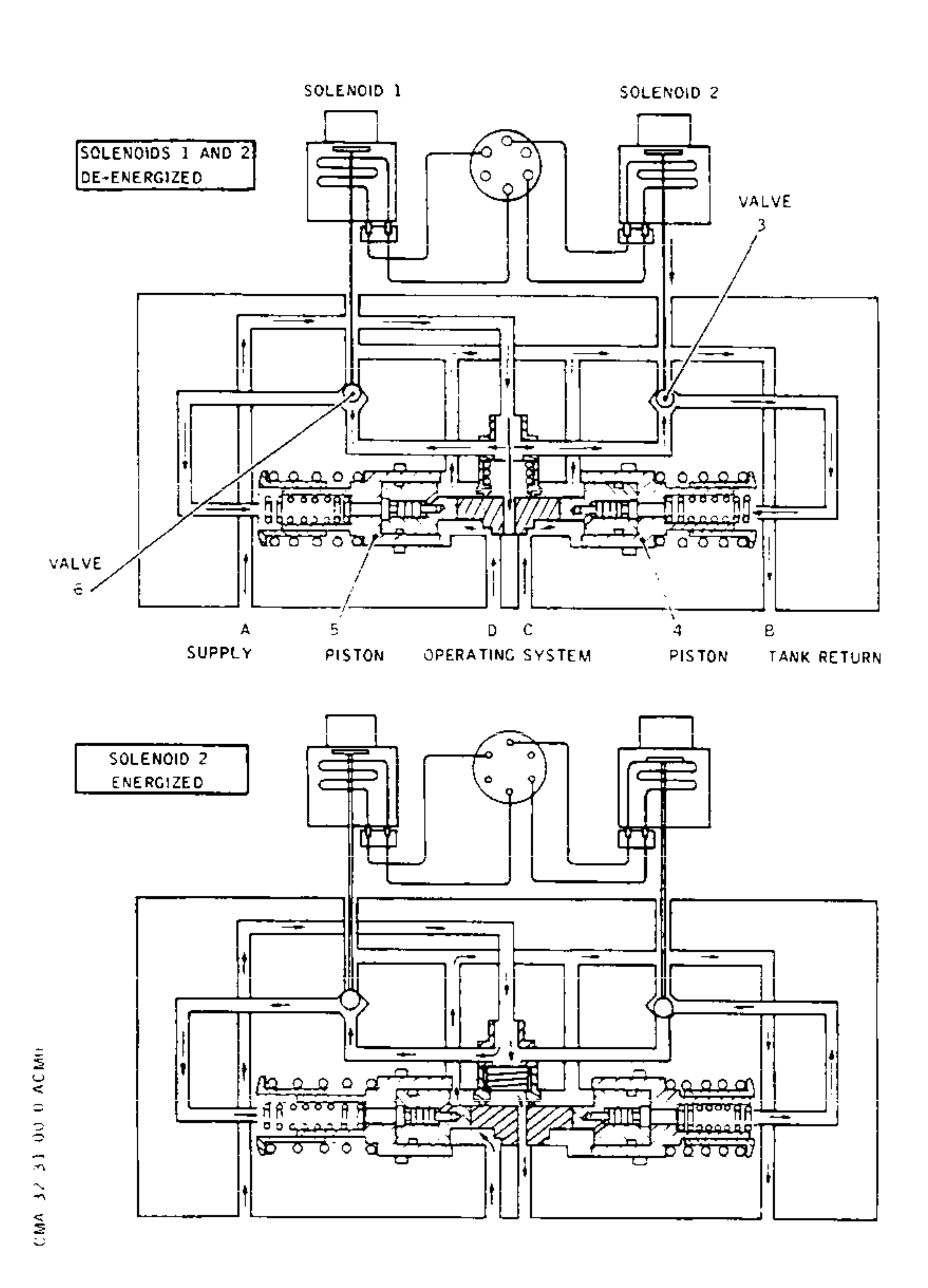
Each selector controls pressure to main gear or door system and ensures return to tank. The selectors include a body with integral supply port (A) return port (B) connected to tank return, and delivery ports (D, C). Two solenoids (1, 2) installed on the selector body each controlling a pilot valve (3, 6) which serves to supply or to cut off hydraulic pressure acting on pistons (4, 5).

C. Operation

(1) When solenoid (2) is energized, valve (3) is closed and pistons (4, 5) move in response to pressure applied to piston (5).
Pressure is supplied through port (C) whilst port (D) is automatically connected to tank return (B).

(2) Reverse action is achieved when solenoid (1) is energized. Pistons (4, 5) move in response to pressure applied to piston (4). Pressure is supplied through port (D) to gear or door operating system whilst port (C) is connected to tank return (B).

(3) When solenoids (1, 2) are de-energized, pistons (4, 5), which are then only subjected to spring pressure, move to intermediate position. Thus ports (D, C) are connected to tank return (B).



Main Gear and Door Selectors
Figure 002

4. Actuating Cylinder - Nose Gear (3500, 3501)
(Ref. Fig. 003)

A. General

Two identical hydraulically operated actuating cylinders serve to retract and to extend the nose gear. The eye-end fitting of each actuating cylinder is connected to the structure by a universal joint whilst the actuating cylinder rod is connected to the gear leg brace struts by an adjustable fork-end fitting which serves to adjust the rod to required length. Stops prevent the cylinder from bottoming when installed on aircraft.

B. Description

The actuating cylinder is of the double-acting type and mainly includes :

(1) A cylinder.

(2) A cylinder end-assembly incorporating an internal nozzle and check valve and an external rod extension hydraulic supply connector (gear retraction).

(3) A cylinder end-assembly fitted with an external manifold. The manifold incorporates the rod retraction hydraulic supply connector (Normal and Emergency gear extension).

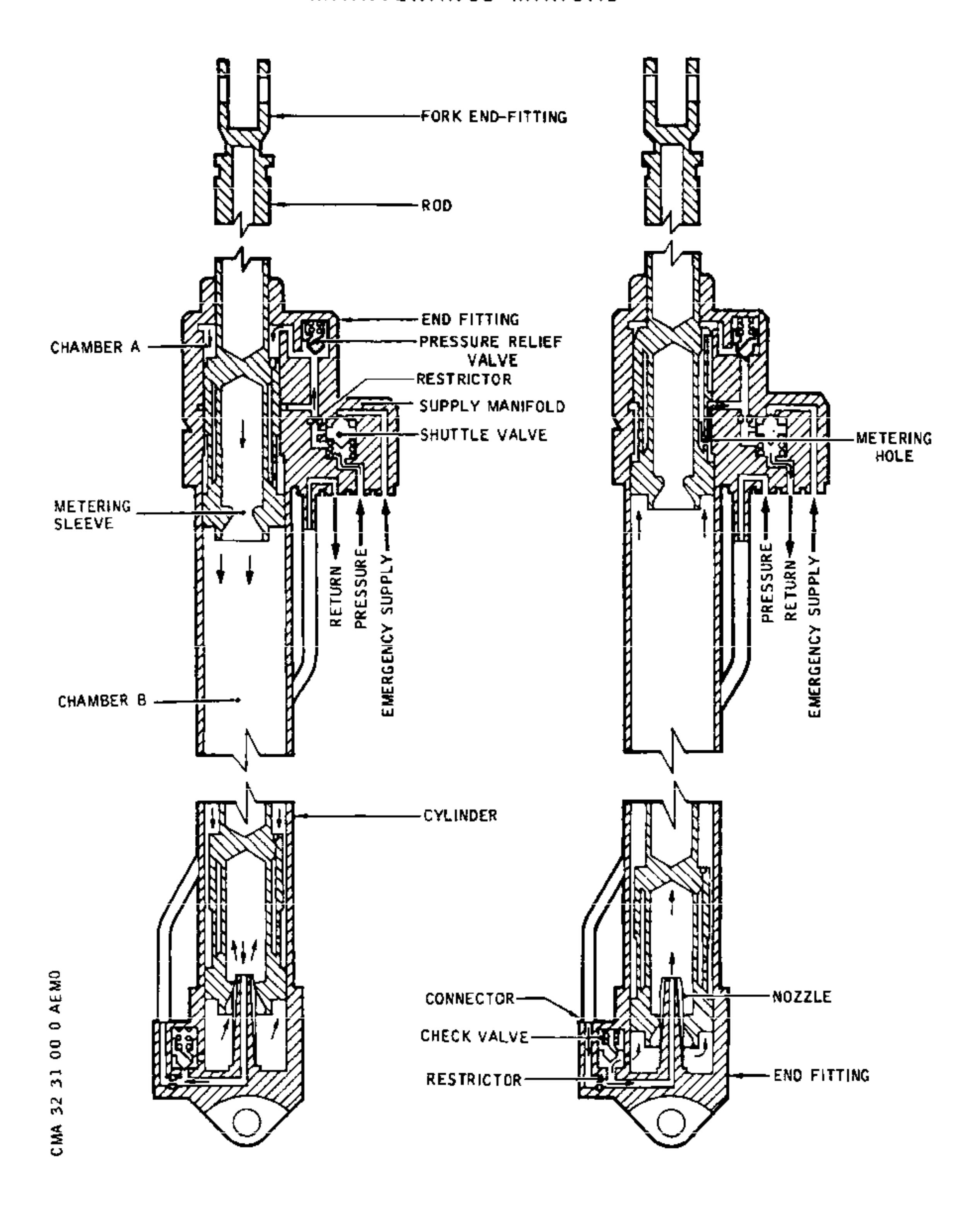
A shuttle valve prevents interconnection between Normal and Emergency systems.
A pressure relief valve which acts as a check valve during the gear retraction phase.

(4) A rod including an internal piston with metering holes. The outer end of this rod is fitted with an adjustable fork-end fitting by which the rod is set to length at time of installation on aircraft.

C. Operation

(1) Actuating cylinder rod retraction (Gear Extension)

In the event of failure of the Normal supply system, the shuttle valve enables the actuating cylinder to be supplied from the Emergency system independent of the Normal system. The Emergency system pressure acts on the shuttle valve incorporated in the supply manifold providing pressure to chamber (A).
The piston moves and thus displaces the rod. Hydraulic



Nose Gear Actuating Cylinder
Figure 003

fluid in chamber (B) is expelled. End-of-travel damping of the rod during rod retraction is achieved when fluid passage through the metering sleeve is restricted by the nozzle.

(2) Actuating cylinder rod extension (Gear Retraction)

Emergency power is not provided for rod extension. For this reason pressure is only supplied through one port. Pressure delivered through that port acts on a valve embodied in the end fitting supplying pressure to chamber (B). Pressure is simultaneously applied to the piston and to the rod and bore via the nozzle. Displacement of the rod results in fluid being expelled from chamber (A). End-of-travel slowdown is accomplished by fluid passage being restricted to metering holes.

5. Strut - Nose Gear Telescopic Drag (3513)
(Ref. Fig. 004)

A. General

The nose gear telescopic drag strut provides fore-and-aft bracing of the nose gear leg in downlocked position. The strut hinges on the aircraft structure through a universal joint. The lower end of the strut is directly connected to the leg by a swivel pin.

B. Description

The telescopic drag strut mainly includes :

(1) Two concentric steel rods sliding in a light alloy cylinder serving as a guide during extension phase. Movement of the rods is controlled by the gear leg which is actuated by two hydraulic actuating cylinders.

(a) The end of the inner sliding rod adjacent to aircraft structure engages with the downlock fingers. The rod end-fitting adjacent to the gear leg serves for strut-to-leg attachment by means of a pin.

(b) The intermediate sliding rod is moved by means of a bush attached to that rod. A stop integral with the cylinder, limits intermediate rod end-of-travel. A stop installed at the end of the rod serves for retraction of the intermediate rod during rod retraction phase.

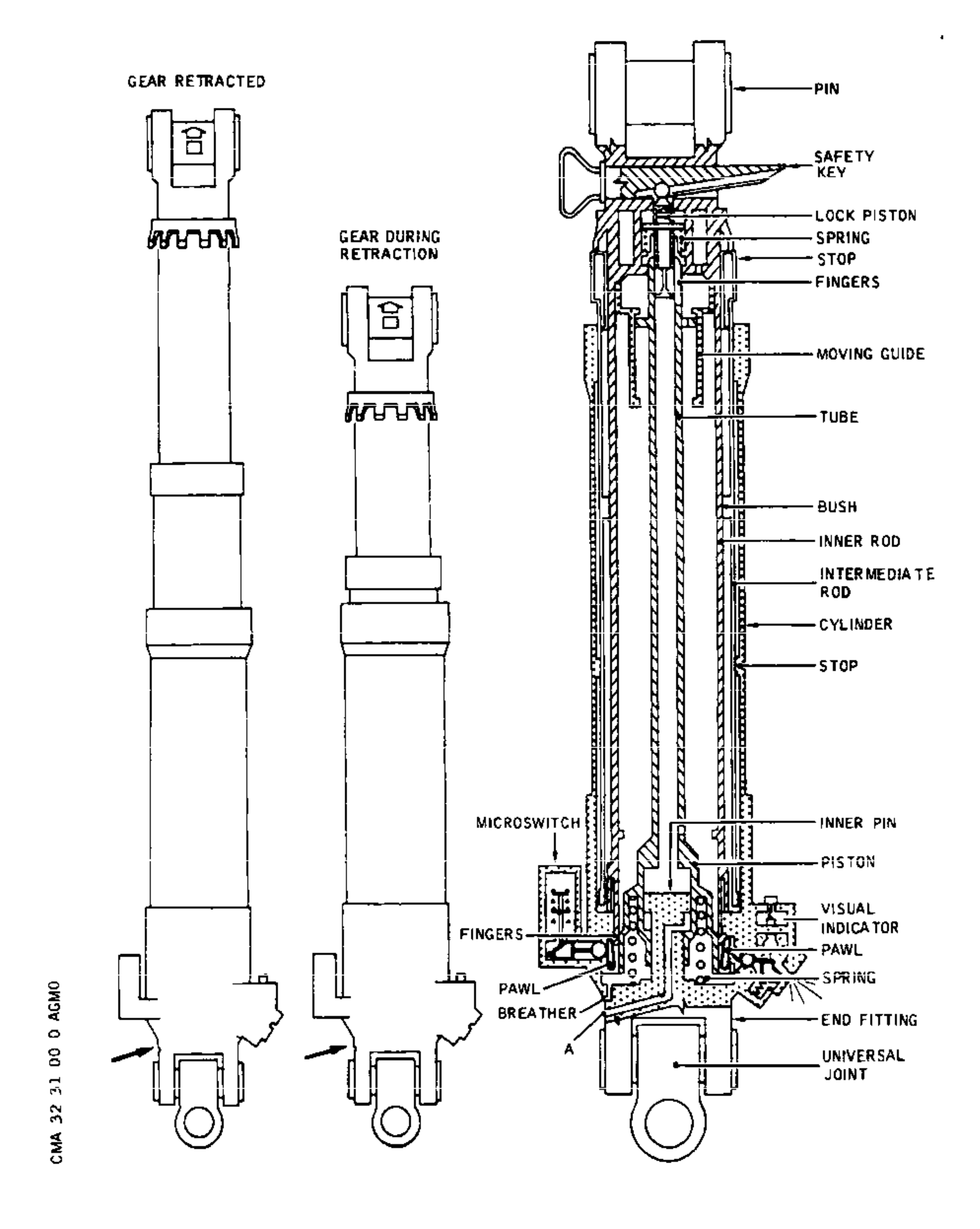
(2) Two ground downlock finger safety assemblies

(a) The manually controlled ground downlock finger safety assembly engages with the inner rod end fitting. The manual ground downlock assembly includes:

- A manual ground downlock safety key
- A downlock piston
- A spring.

(b) The downlock safety assembly adjacent to aircraft structure includes :

- A lock piston with extension tube dependent on the manually controlled ground downlock safety assembly.



Nose Gear Telescopic Drag Strut
Figure 004

- A piston return spring
- An end fixed lock-bushing
- Lock fingers integral with inner rod
- A moving guide providing centring and alignment of rod until full extension of strut has been achieved.
- Two pawls pivoting on the piston which actuate the visual indicator and the microswitch respectively
- The piston is prevented from rotating by a hollow pin installed at the end. The hollow pin acts as a breather.

C. Operation

(1) Extension of rods

When the ground downlock safety key is removed the manually controlled ground downlock safety assembly is released and the return spring causes the piston to move thus releasing the lock fingers.

Release of the downlock safety assembly adjacent to aircraft structure is thence possible. Hydraulic pressure delivered through port A causes the piston to move and compress the return spring thereby releasing the lock fingers.

Retraction of the gear causes the inner rod to extend and thus free the lock fingers from the associated lock-bushing. The inner rod moves the intermediate rod at end-of-travel.

(2) Retraction of rods

Gear extension causes the inner rod and the intermediate rod to retract. Movement continues until gear is fully extended. Downlocking of safety assembly adjacent to structure is thus accomplished automatically. The lock fingers located on the inner rod move back the piston and engage with the associated lock-bushing. The piston under the action of the return spring returns to its initial position, engaging the lock fingers. This action causes the downlock safety lock fingers adjacent to the gear leg to engage with the associated lock-bushing.

The two pawls located on the locking piston simultaneously actuate the visual indicator and the nose gear downlocked microswitch. Installation of the manual ground downlock safety key causes the locking piston

to bottom and to be immobilized.

(3) Ground Safety (Ref. Fig. 005)

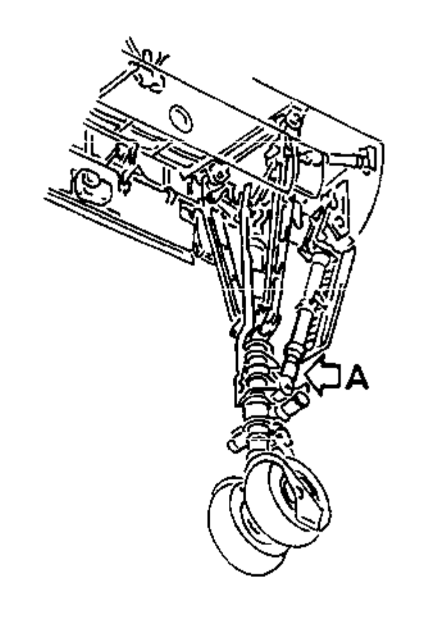
(a) An internal safety feature prevents installation of safety key C22127 with gear in down position if the telescopic drag strut is not locked.

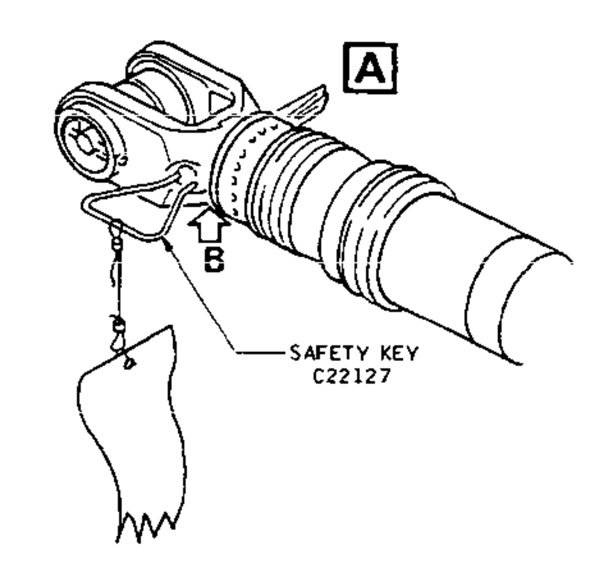
(b) Installation of safety key C22127 with telescopic drag strut locked.

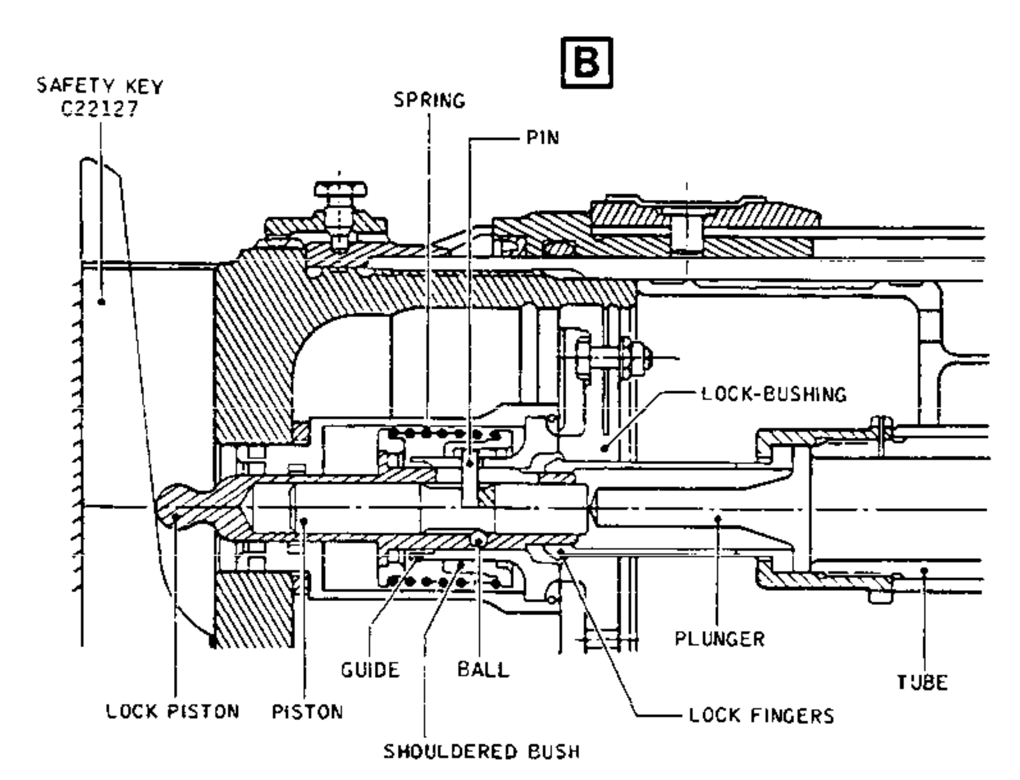
The lock fingers are engaged in the lock-bushing. The plunger attached to the tube loads the piston on its stop thus aligning the piston throat and the guide ramp and permitting the passage of the balls. The lock piston is loaded against the drag strut body by means of the spring. The four balls are located between the guide ramp and the piston throat. Insertion of safety key C22127 displaces the lock piston which drives the balls out of the guide ramp and along the piston throat. With the safety key fully inserted the lock piston is in stop position; the end of the lock piston comes between the lock fingers and the piston thus positively locking the drag strut.

(c) Safety key C22127 installation inhibition with telescopic drag strut not locked.

When the telescopic drag strut is not locked, the lock fingers are not engaged in the lock-bushing. The plunger attached to the tube does not contact the piston. The spring loads the piston via the pin and shouldered bush. The four balls are located between the guide ramp and the piston. The guide ramp and the piston throat are not aligned, the four balls can no longer be driven out of the guide ramp and insertion of safety key C22127 is inhibited.







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Locking Mechanism
Figure 005

6. Strut - Main Gear Telescopic Brace (3413, 3414)
(Ref. Fig. 006 and 007)

A. General

The main gear telescopic brace strut provides lateral bracing of each main gear leg in downlocked position.

The strut is actuated by the movement of the gear leg and plays no part in either gear retraction or extension.

However, the strut includes a pneumatic actuator for use in Ultimate Emergency, operated by aircraft hydraulic system tank pressurization air.

The strut incorporates an internal rod downlocking system. Downlocking is automatic and fully mechanical. Downlock release is accomplished hydraulically.

B. Description

The brace strut mainly includes :

(1) A cylinder containing a hollow sliding rod

(a) The brace strut cylinder end is attached to the aircraft structural reinforcement fitting by means of a trunnion fitting.

(b) The sliding rod includes a spherical eye-end fitting attaching to a gear leg fork fitting. This adjustable eye-end fitting serves for perpendicular setting of the gear leg.

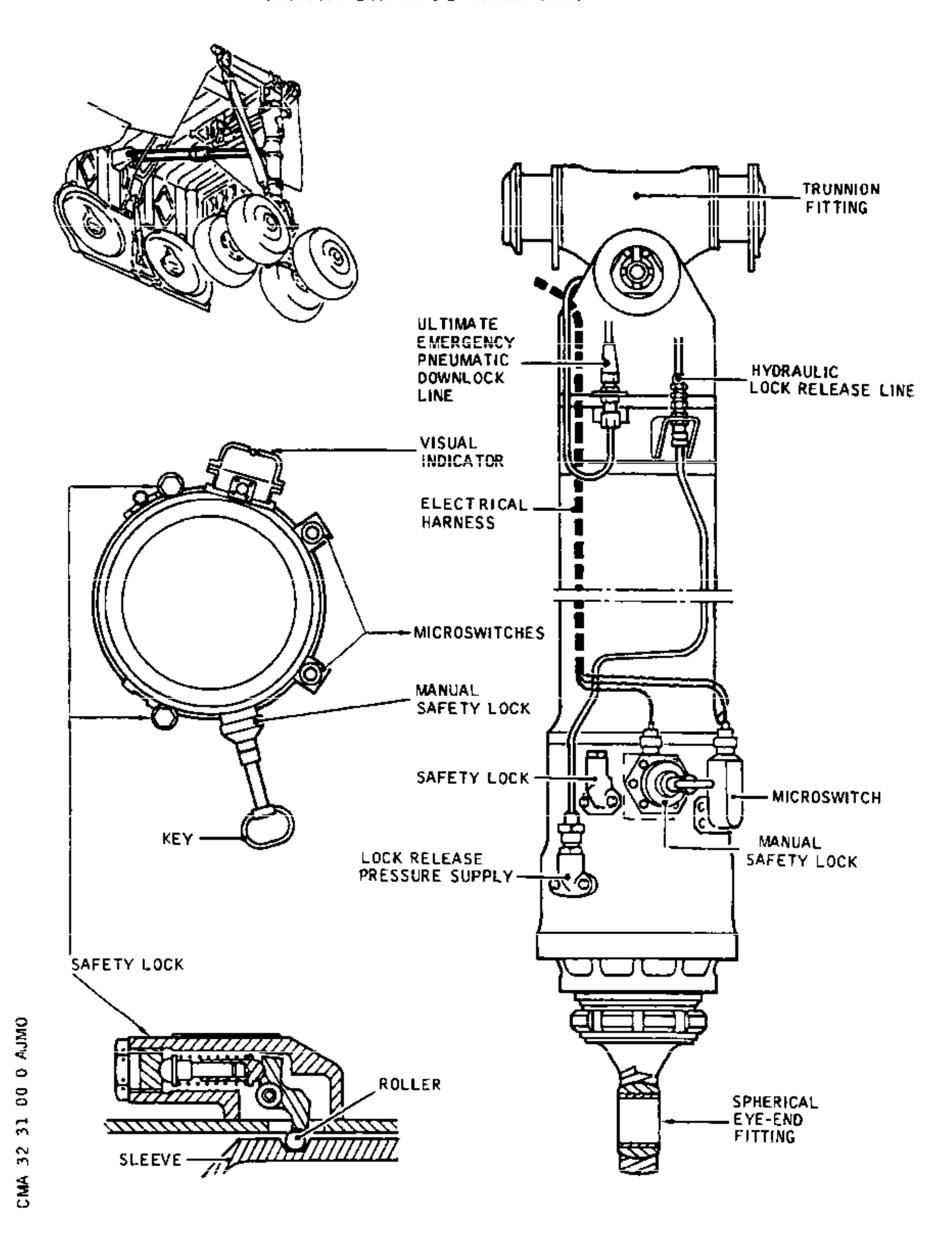
(2) A downlocking system which includes :

(a) An annular lock comprising ten radial segments separated by dividing blocks and retained by an internal spring clip.

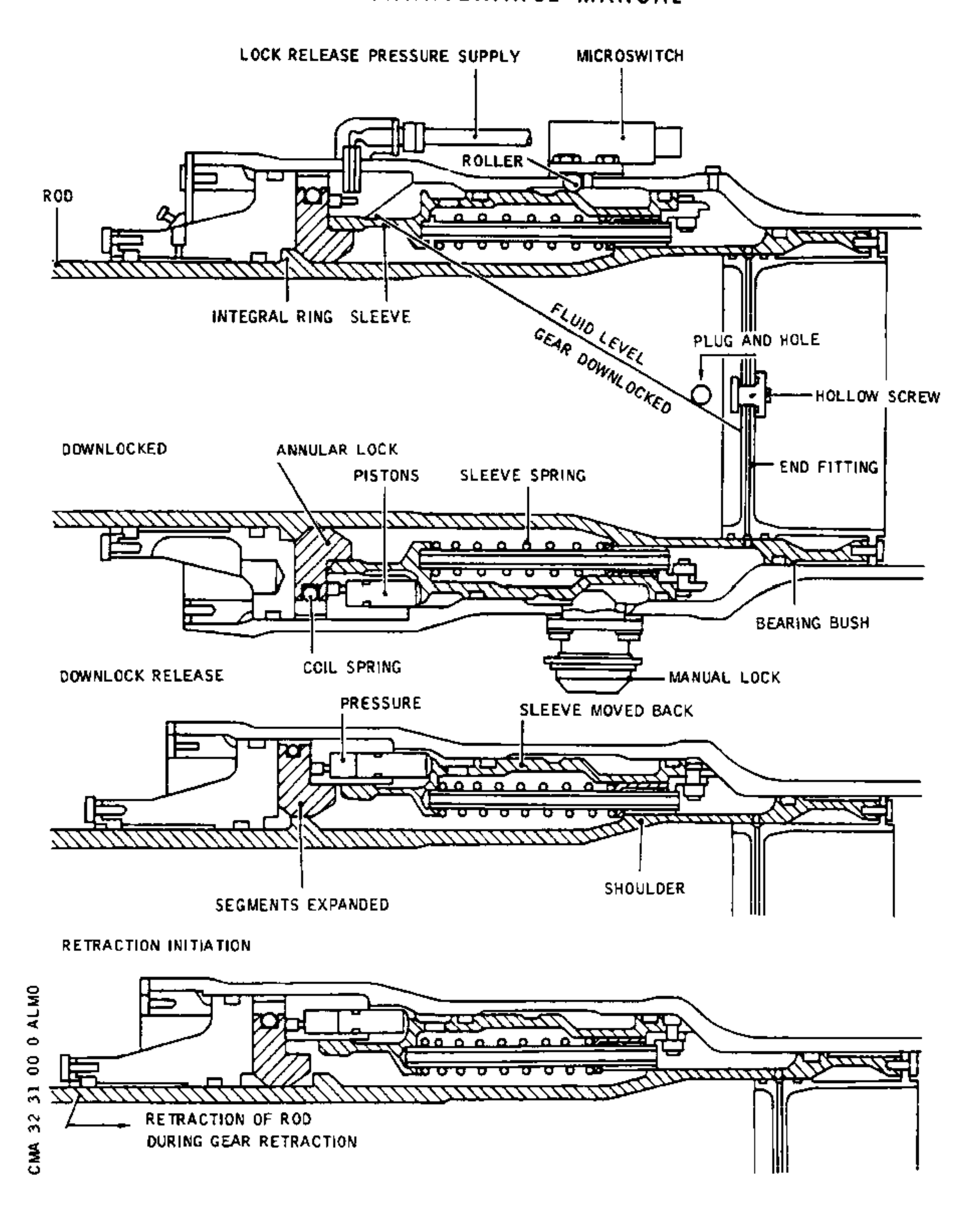
(b) A sleeve concentric with the rod end sliding in the cylinder. This sleeve includes a taper bore front section serving to positively lock the annular lock against the rod integral ring.

(c) A set of pre-loaded coil springs which tends to compress the sleeve in the lock direction.

(d) An annular hydraulic jack containing nine sleeve lock-release pistons.



Main Gear Telescopic Brace Strut - Description
Figure 006



Main Gear Telescopic Brace Strut - Operation
Figure 007

(3) A side hole closed off by a plug. This hole serves for injection of hydraulic fluid into the downlocking system annular chamber to provide lubrication of locking mechanism as well as rod bearing bush.

In the event of leakage at the annular jack pistons, the fluid collects in the annular downlocking chamber. A hole at the bottom of the rod running across a hollow screws serves for evacuation of excess fluid into the end of the rod forming a low point. A plug installed in the spherical end fitting enables such leakage to be detected.

(4) Two safety locks

Each of the locks is spring-loaded against a roller which serves to maintain the sleeve in lock-released position.

(5) A manual key-operated ground safety lock serving to immobilize the sleeve in locked position.

(6) A visual indicator.

(7) Two microswitches actuated by a roller coming into contact with the sleeve.

These microswitches are connected into the indicating circuit as well as the gear retraction electrical sequence channel.

(8) An electrical harness supplying electrical power to the microswitches and visual indicator.

(9) A downlock release hydraulic supply line.

(10) An air supply line connected to the bottom of the strut cylinder.

C. Operation

(1) Hydraulic downlock release and retraction of gear.

Green pressure is applied to the annular jack and the pistons move the sleeve thereby compressing the springs. The lock is released, movement of the sleeve actuates the gear downlocked microswitches.

The gear leg retracts moving the strut rod in retraction direction, the rod 45° lead integral ring rides along the segment tapered-ramp and expands the

segments. As the sleeve moves the sleeve-springs gradually expand and the sleeve comes to rest in lock-released position, where it is maintained by the safety locks. The lock segments contract under the action of the spring clip.

With the gear uplocked, the annular jack is no longer pressurized, and the pistons remain in contact with the sleeve.

(2) Extension of gear and mechanical downlocking

Gear extension causes the strut rod to extend. As soon as the shoulder of the rod reaches the sleeve, the compressed springs move the sleeve towards the lock. Simultaneously the rod integral ring rides along the segment tapered-ramp and the segments contract.

As soon as the sleeve has passed through the lock, the lock segments contract under the action of the spring clip as well as under the more positive action of the sleeve taper bore front section (collet-type spring-loaded action). With the sleeve in locked position the microswitches move to de-activated position.

(3) Ground safety locks

With the strut downlocked the sleeve may be mechanically immobilized by inserting the ground safety key.

Accidental operation of the retraction system is therefore impossible since the strut is positively downlocked.

(4) Pneumatic downlocking

In case of Ultimate Emergency gear extension (extension under free-fall action) downlocking can be achieved automatically.

Whenever downlocking is not accomplished under free-fall action, pressurized air is ported into the strut cylinder. The end of the rod acts as a pneumatic piston. The rod is thus moved to downlocked position.

7. Uplock - Main Landing Gear Door (0408, 0409)
(Ref. Fig. 008)

A. General

Two identical uplocks ensure gear door uplocking in gear uplocked or downlocked configuration. Doors are held in this position until the uplock release order is given.

In each uplock a spring-loaded hook achieves door uplock.

An actuating cylinder containing two tandem-mounted pistons serves for hydraulic release of the hook.

In Normal operation one of the pistons is operated by the Green hydraulic system.

In Emergency operation the other piston is operated by the Yellow hydraulic system.

An independent manual control serves for uplock release during Ultimate Emergency door opening.

The gear door uplocked microswitch on the uplock is activated and warning light alerts crew when uplock fails to operate.

B. Description

The uplock unit includes :

(1) An actuating cylinder containing two tandem-mounted pistons :

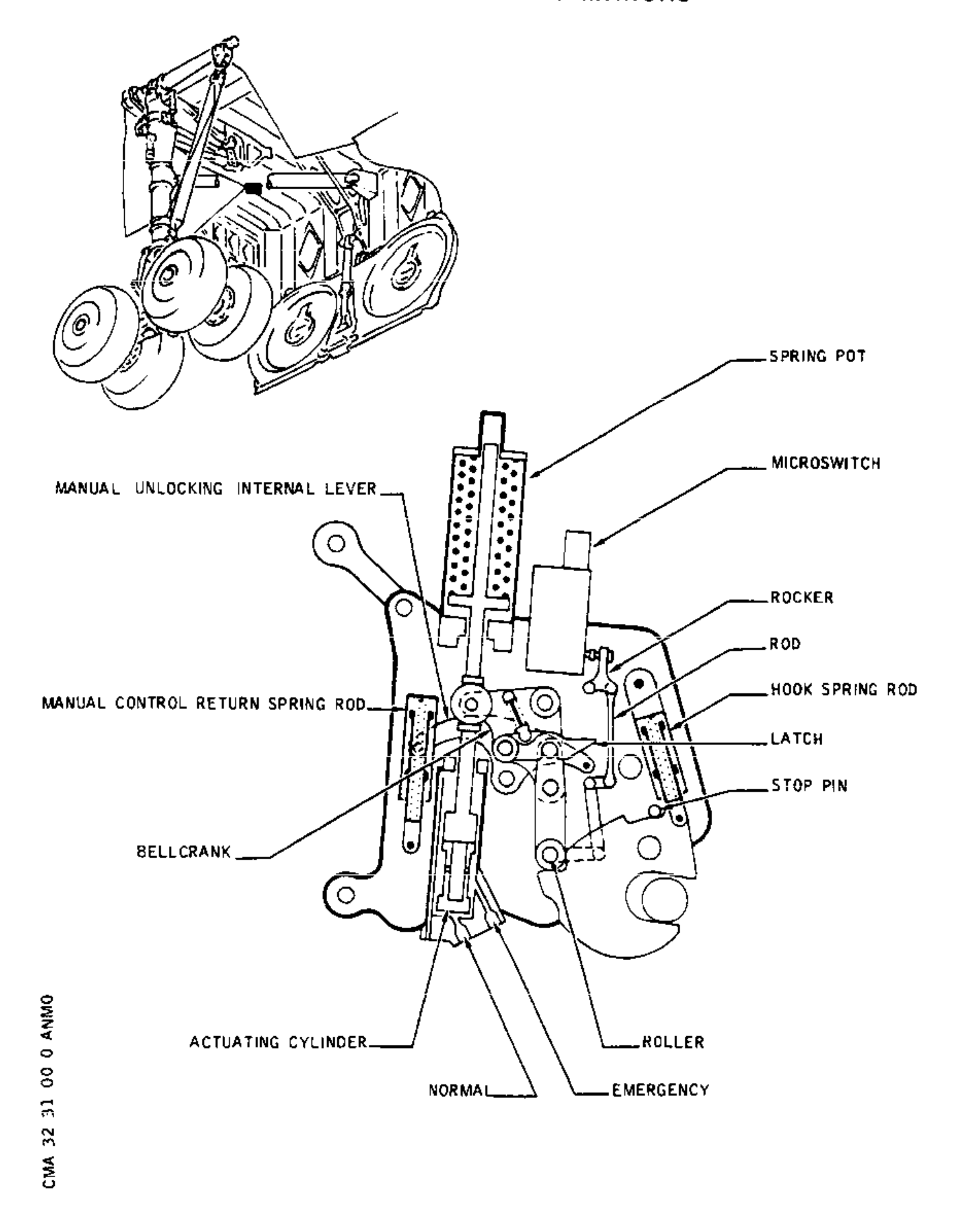
One operated by Green pressure (Normal operation) and the other by Yellow pressure (Emergency operation).

(2) A spring pot provides return pressure for the actuating cylinder. This pot includes a shock damper which absorbs shocks during uplock release.

(3) The hook uplock system consists of a bellcrank, fitted with a roller, comprising two non-aligned levers and a latch. This system ensures hook uplock and hook manual release in Ultimate Emergency operation.

During Normal and Emergency operation the latch locks the two levers together.

During Ultimate Emergency operation the latch is released thus unlocking the levers.



Main Landing Gear Door Uplock
Figure 008

(4) A hook maintained in released position by a spring rod.

In uplocked position the bellcrank roller bears against the upper part of the hook.

(5) A splined shaft whose outer end connects to the Ultimate Emergency manual control lever. The inner end of this shaft is connected to a spring-rod loaded lever. This spring-rod enables the Ultimate Emergency system to be reset to neutral.

(6) A rod and rocker mechanism connected to the bellcrank actuates a microswitch.

C. Operation

(1) Uplock release

Green system pressure delivered to the uplock unit inlet port powers the actuating cylinder which moves the bellcrank and compresses the spring pot.
The bellcrank roller frees the hook which pivots under the weight of the doors.

The hook moves to the end-of-travel position and is held there by the hook spring-rod.

When Green pressure is no longer applied, the spring pot loads the bellcrank against the hook and the roller moves into a groove in the hook thus creating a hard spot (overcentre effect).
The movement of the bellcrank causes the rocker to rotate and free the microswitch plunger. The microswitch signals that the hook is released.

(2) Closing - Uplocking

During door closing, the uplock-roller bears against the upper jaw of the hook causing the hook to move upwards. The bellcrank-roller then locks the hook under the action of the spring pot.

8. Valve - Main Gear Metering (4010, 4011)
(Ref. Fig. 009)

A. General

Two identical metering valves are installed in the main gear bays. Each valve installed in the main gear actuating cylinder supply system serves as follows :

- To cut off hydraulic power to the main gear actuating cylinder while the associated shortening lock is in locked position.
- Slow down main gear movement at end-of-uplock sequence.

B. Description

The metering valve includes :

- A body in which slides a piston. The piston is hydraulically controlled through Green system pressure and is maintained in de-activated position under spring pressure.
- A plunger, operated mechanically through a roller installed on a bellcrank pivoting under the action of the actuating cylinder, slowing down main gear actuating cylinder at end-of-travel during landing gear retraction.
- Four check valves.

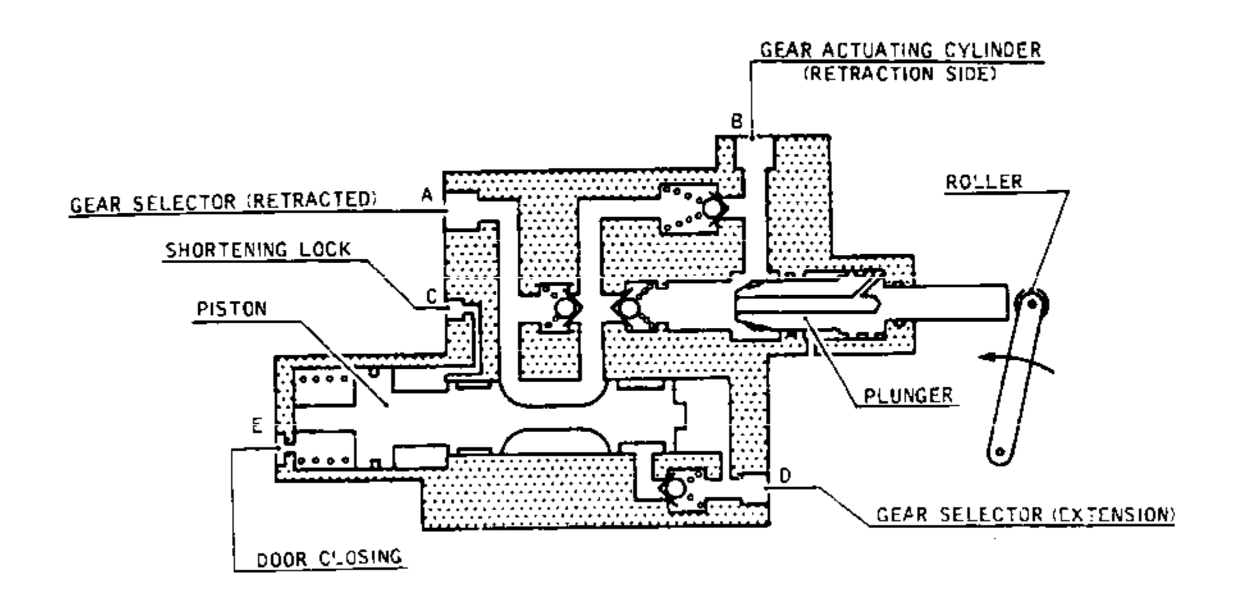
C. Operation

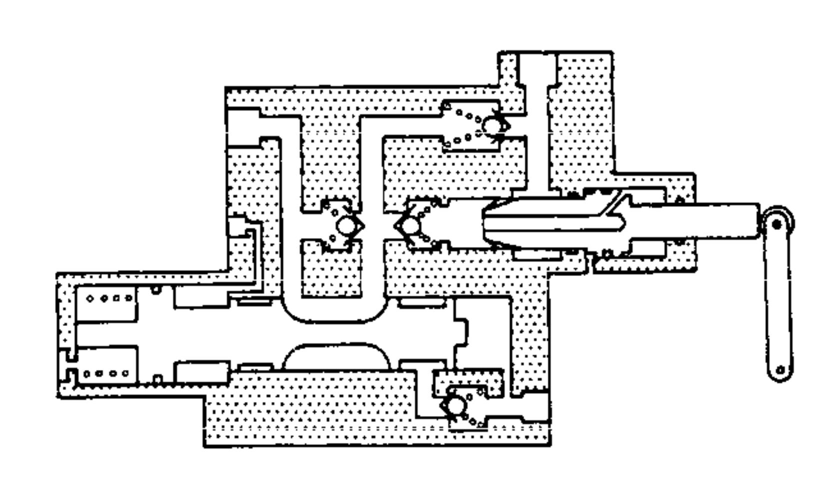
With aircraft on the ground and the landing gear Normal control lever in DOWN position the valve piston is maintained in de-activated position under spring action in addition to door closing Green hydraulic pressure.

(1) Gear retraction

With the landing gear Normal control lever in UP position, the valve piston is maintained in de-activated position throughout the door opening sequence under spring pressure. Pressure is available at port A. As soon as the shorting lock is released the corresponding sequence valve delivers pressure to port C. The valve piston moves to selected position and the spring is compressed. Interconnection between ports A and B is cut off and Green system pressure is ported from A to B. At start of gear retraction the plunger is not depressed and fluid is therefore not metered between port A and port B.

When the gear has moved through an arc of 78 degrees, the plunger controlled by the roller is depressed.





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Main Gear Metering Valve
Figure 009

until the gear reaches an arc of 88 degrees 50 minutes and fluid flow from A to B is gradually restricted.

Metering of the fluid slows down the gear at moment of uplock.

As soon as gear is retracted, the valve piston returns to deactivated position under the combined action of the spring and door closing Green system pressure delivered to port E.

Main gear actuating cylinder pressure (retraction side) is thus relieved through port D.
When the landing gear Normal control lever is placed in NEUTRAL position ports A, C and E are connected to tank return.

(2) Gear extension

During gear extension sequence, Green system pressure is delivered simultaneously to the extension side of the gear actuating cylinder and through valve port D. The valve-piston moves from de-activated position to selected position.

Return fluid from the gear actuating cylinder flows from Port B to A.

With gear downlocked, port D is connected to tank return. The valve piston returns to de-activated position under combined action of the spring and door closing Green system pressure delivered to port E.

9. Operation-Normal Extension and Retraction

When the solenoids of the safety electrovalves (G31, G32) are energized the pistons of return and depressurization selector valves (4012, 4014) are moved by Green system pressure thus pressurizing gear door selector valves (G29, G30) and gear selector valves (G26, G27) and connecting return pressure to Green hydraulic tank.

The triple valve with depressurization valve (4303) as well as the depressurization valve (1017) and dual valve (0512) only operate when Ultimate Emergency gear extension procedure is adopted.

A. Retraction
(Ref. Fig. 001 and 010)

(1) General

(a) The landing gear Normal control lever may be moved between DOWN and NEUTRAL positions irrespective of landing gear position.

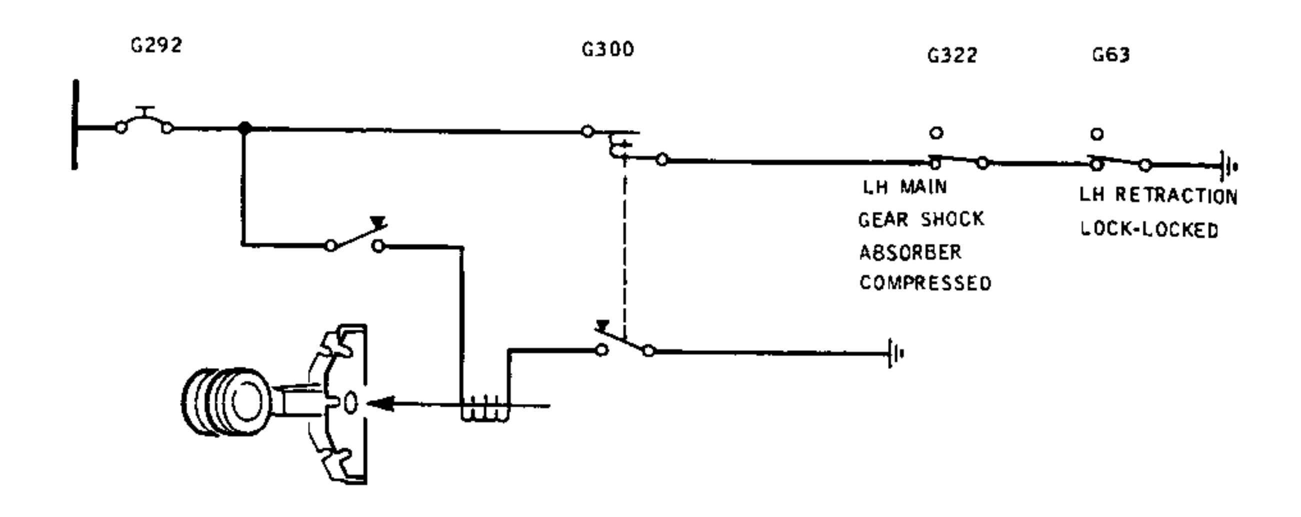
A mechanical safety lock prevents movement of the landing gear Normal control lever (switch G5) to UP position whenever the aircraft is resting on its wheels. When the solenoid is energized this safety lock may be overridden by moving the control lever provided that the following conditions have been fulfilled :

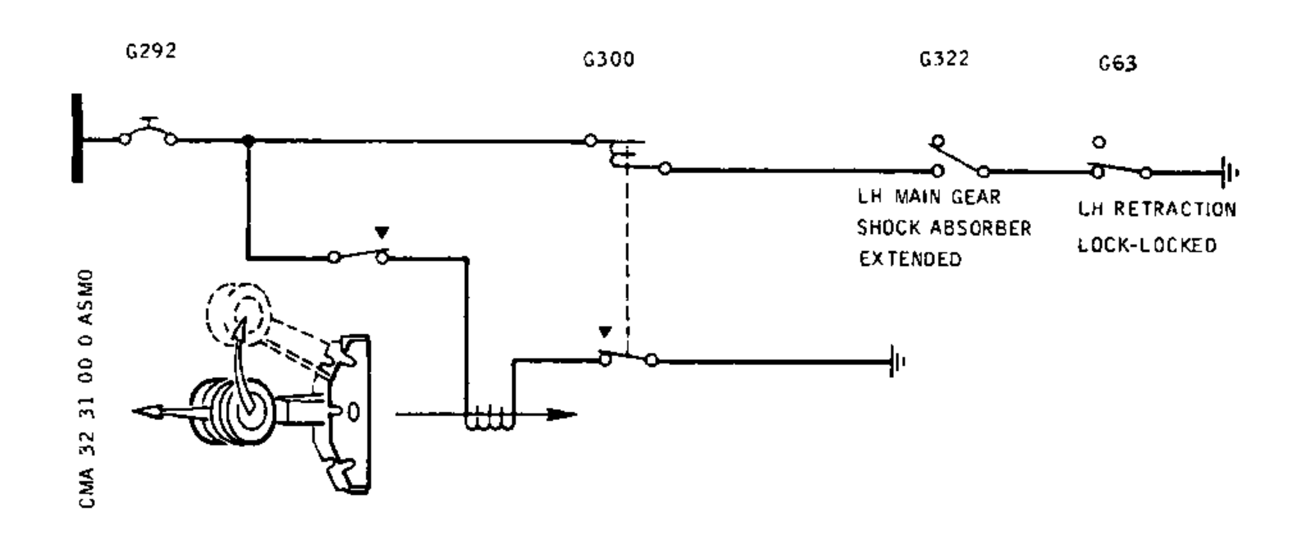
- LH main gear shock absorber (G322) extended,
- LH main gear shortening lock (G63) engaged.

NOTE : In case of absolute necessity, a push-button enables the lever to be positioned in UP position by mechanical disengagement of the safety lock system.

(b) With landing gear Normal control lever (switch G5) in UP position, the safety electrovalves (G31) (G32) are energized irrespective of visor position.

(c) Prior to moving the landing gear Normal control lever (switch G5), with main and nose gear as well as the tail gear downlocked, Green LH, NOSE, T and RH arrows on gears position indicating unit (G52) are illuminated.





Safety Lock Solenoid - Normal Control
Figure 010

(d) With landing gear Normal control lever (switch G5) placed in UP position, the gear retraction sequence is as follows :

- Uplock release of main and nose gear doors,
- Opening of main and nose gear doors,
- Downlock release of nose gear drag strut, main gear brace struts, and shortening lock release.
- Simultaneously retraction of nose gear, main gears and tail gear with shortening of main gears,
- Uplocking of gears,
- Closing of main and nose gear doors,
- Uplocking of main and nose gear doors.

(2) Uplock release and opening of doors (Ref. Fig. 001 and 011)

(a) With nose gear shock absorber (G321) and RH main gear shock absorber (G324) extended, safety electrovalves (G31, G32) are energized irrespective of the position of the visor. Green hydraulic system pressure is supplied to door selectors (G29, G30) and nose and main gear selectors (G26, G27) through gear return and depressurization selector valves (4012, 4014).

(b) Door selector (G29, G30) solenoids are energized on opening side if nose gear and RH main gear are not uplocked (G17, G13).

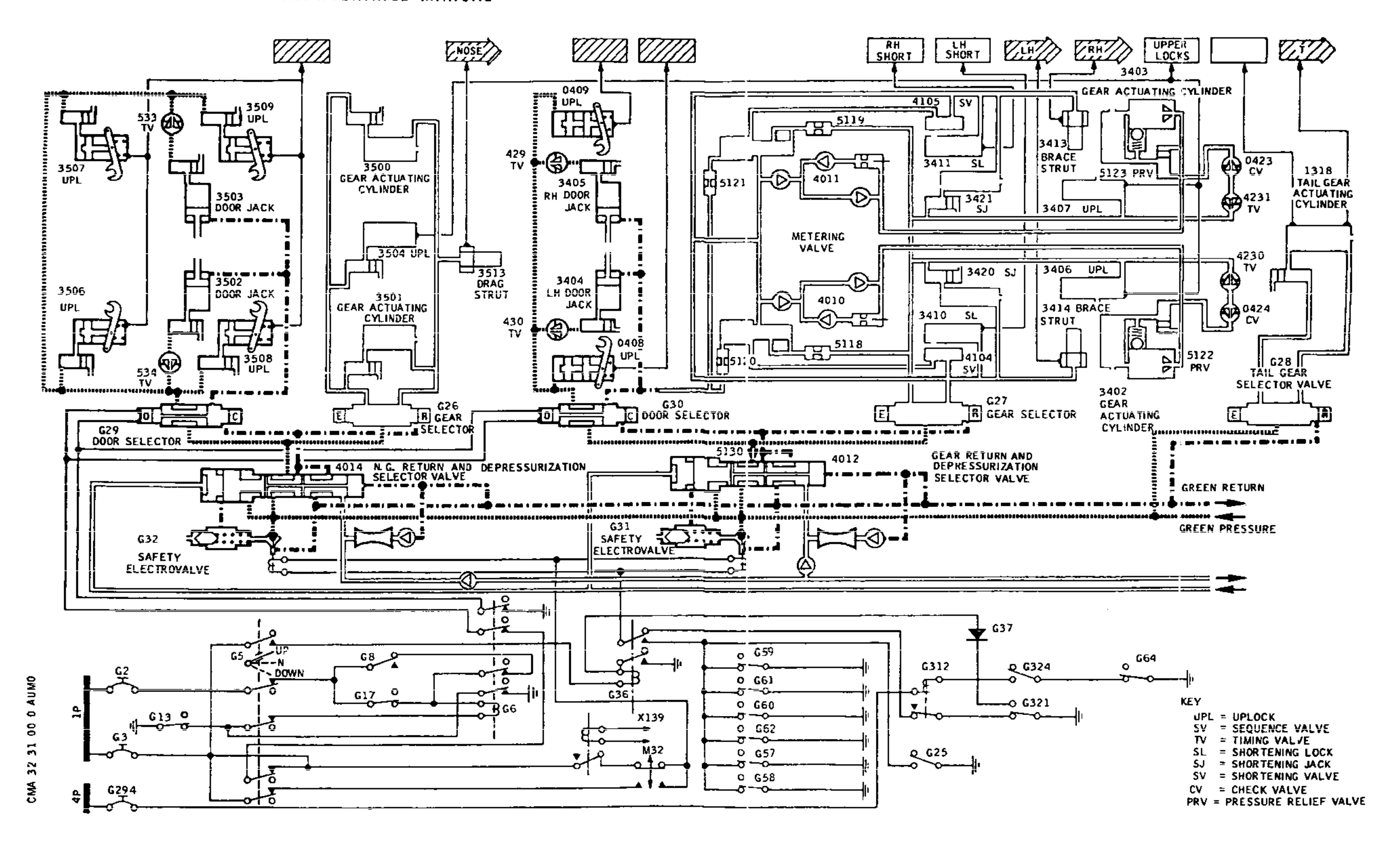
(c) The selectors deliver pressure simultaneously to door uplocks (0408, 0409, 3506, 3507, 3508, 3509) and to opening side of door actuating jacks (3404, 3405, 3502, 3503).

(d) Timing valves (429, 430, 533, 534) located downstream of door actuating jack pressure lines (Opening side only) enable door uplock release to be achieved prior to pressurization of door jacks.

(e) On indicating unit (G52) green LH, NOSE, RH arrows and the corresponding red indicator lights are illuminated. Green T arrow is also illuminated.

(f) Solenoids of gear door selectors (G29, G30) remain energized and maintain opening side pressure throughout the landing gear retraction sequence.

(3) Downlock release and gear retraction



Gear Retraction - Door Opening Sequence
Figure 011

(Ref. Fig.001 and 012)

(a) With nose gear wheels centred and main gear bogie beams aligned, microswitches (G14, G18, G21) are closed. Full closing of doors results in closing of microswitches (G15, G16, 1G20, 2G20).

Consequently, solenoids of electro-hydraulic gear selectors (G26, G27, G28) are energized on retraction side.

(b) Main gears

(b1) Selector G27) simultaneously supplies shortening locks (3410, 3411) brace struts (3413, 3414) shortening jacks (3420, 3421) and the metering valves where the pressure remains available for pressurization of gear actuating cylinders (3402, 3403).

(b2) Release of shortening locks (3410, 3411) through sequence valves (4104, 4105) enables pressure to move the piston of metering valves (4010, 4011). As this valve moves from Emergency position to Normal position pressure is applied to retraction side of landing gear actuating cylinder.

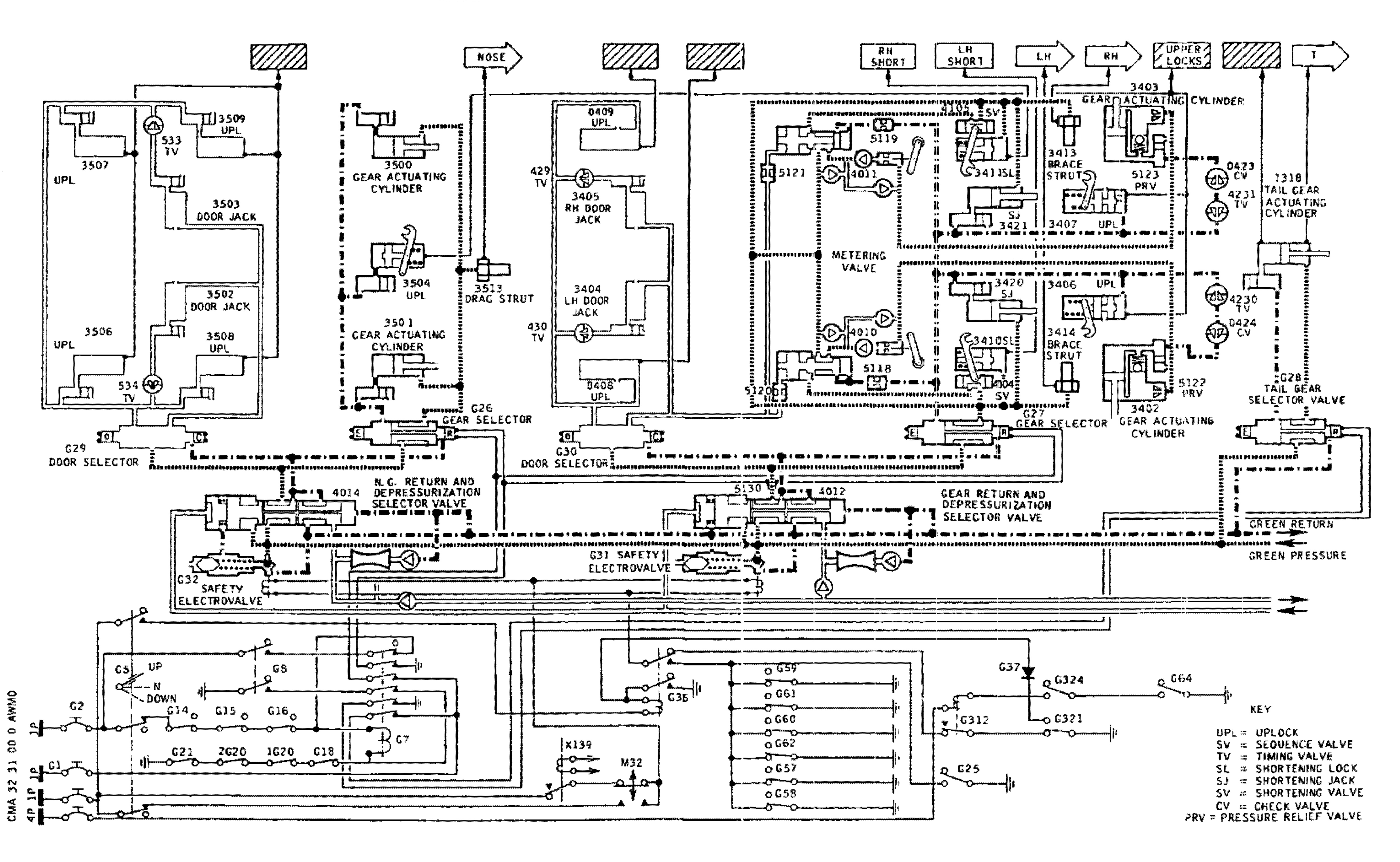
(b3) At start of sequence, since the metering valve control plunger is in neutral position, a non-restricted flow of hydraulic fluid is ported to retraction side of gear actuating cylinders (3402, 3403). When moving gears have reached displacement angle of 78° (nominal value) the valve piston control plunger operating-roller which is connected to the gear actuating cylinders by rods and bellcranks bears against the end of the control plunger. The plunger, which is thus gradually depressed, in turn moves the valve piston which gradually ports throttled hydraulic fluid to gear actuating cylinders (3402, 3403).

Main gear retraction speed is thus reduced at end-of-travel.

(c) Nose gear

Selector (G26) provides hydraulic power for nose gear drag strut downlock release and supplies hy-

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Gear Retraction - Gear Downlock Release
Figure 012

draulic pressure to retraction side of gear actuating cylinders (3500, 3501). The displacement of gear actuating cylinder (3500, 3501) rod is controlled by a restrictor on retraction side. Damping of rod at end-of-travel is achieved through reduction in hydraulic fluid flow-passage cross-sectional area.

(d) Tail gear

Selector (G28) hydraulically powers and provides hydraulic lock release for tail gear actuating cylinder (1318).

NOTE : Tail gear actuating cylinder (1318) mechanically uplocks and downlocks with hydraulic uplock and downlock release for each manoeuvre.

(e) Green LH, NOSE, T and RH arrows on gears position indicating unit (G52) extinguish. Amber UPPER LOCKS light illuminates and red warning light corresponding to Green T arrow illuminates during tail gear retraction then extinguishes.

(4) Gear uplocking

(a) Gear uplocking is automatic and achieved mechanically through uplocks (3406, 3407, 3504). In gear uplocked position the uplock hooks are locked. A spring rod installed in each of the three uplocks (3406, 3407, 3504) dampens gear uplock impact.

Upon completion of retraction and uplock phase of the three gears, the energization circuit of solenoids (G29, G30) on opening side of door selectors is open. Simultaneously the closing side of these solenoids is excited by closing of microswitches (G17, G12, G13). Main and nose gear doors close. Closing side of door selectors (G29, G30) remains energized so long as landing gear Normal control lever (switch G5) is in UP position.

NOTE : Throughout door closing sequence, nose gear, main gear and tail gear selectors (G26, G27, G28) remain energized through relay (G8) being self-held so long as landing gear Normal control lever (switch G5) is in UP position.

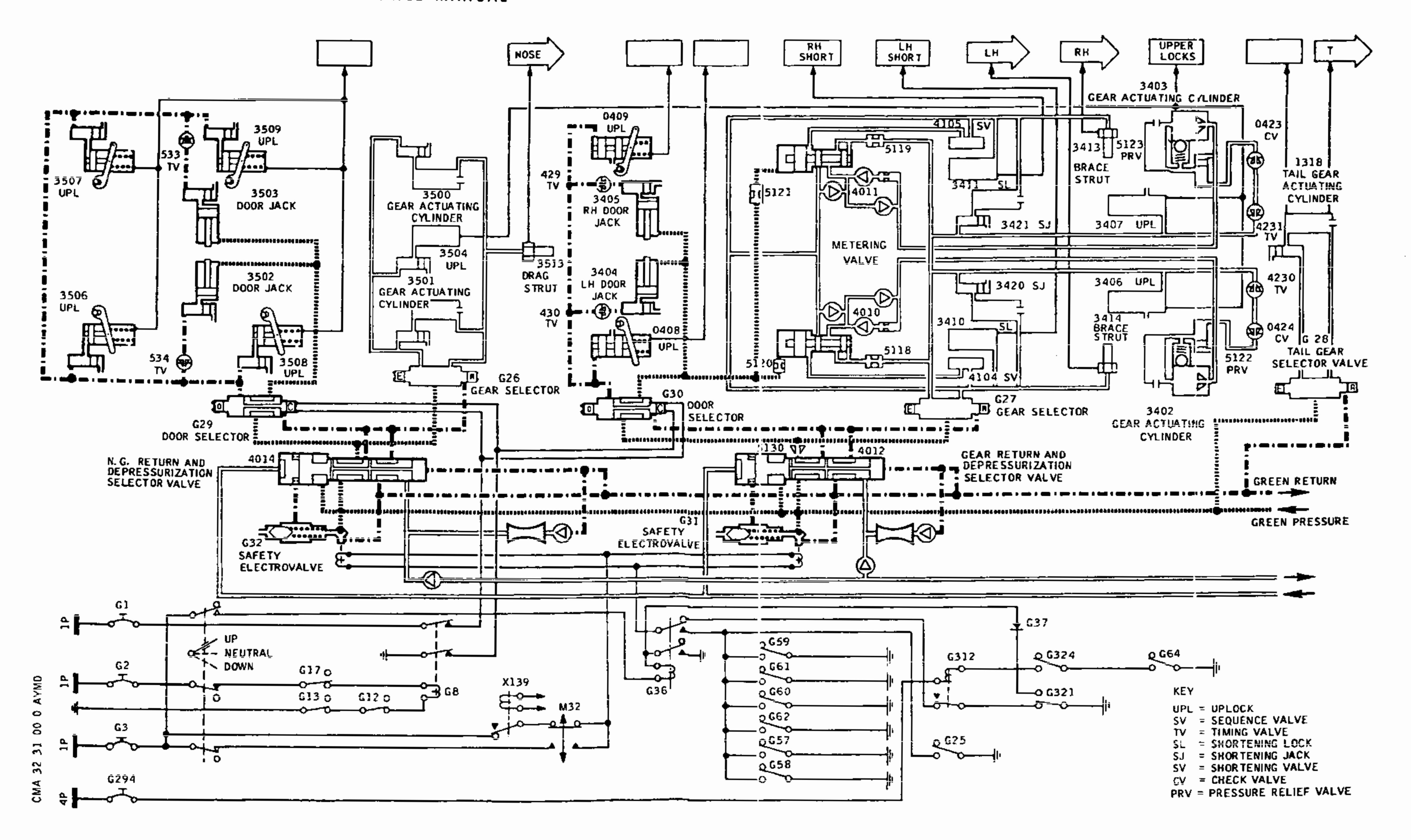
(5) Closing and uplocking of doors
(Ref. Fig.001 and 013)

Closing side of main gear door selector (G30) and nose gear door selector (G29) solenoids is energized if the nose gear (G17) and main gear (G12, G13) are uplocked. The selectors directly supply closing side of door actuating jacks (3404, 3405, 3502, 3503).

At end-of-travel main and nose gear doors are closed and uplocked automatically by uplocks (0408, 0409, 3506, 3507, 3508, 3509).

All lights on indicating unit (G52) are extinguished.

Gear retraction is thus accomplished at the end of this sequence. When landing gear Normal control lever is placed in NEUTRAL position, door selector valves (G29, G30) as well as gear selector valves (G26, G27, G28) are no longer energized and all gear systems are connected to tank return.



Gear Retraction - Door Closing Sequence
Figure 013

B. Extension

(1) General

With visor lowered (not uplocked) and landing gear Normal control lever in DOWN position, the following sequences are accomplished :

- Safety electrovalves energized.
- Uplock release of main and nose gear doors,
- Opening of main and nose gear doors,
- Uplock release of gears and release of tail gear,
- Extension of gears, of tail gear and extension of main gear shock absorbers,
- Downlocking of nose gear (drag strut), of main gear (brace strut) of main gear shock absorbers (shortening lock) and tail gear (actuating cylinder),
- Closing of main and nose gear main doors,
- Uplocking of doors.

(2) Uplock release and door opening (Ref. Fig.001 and 014)

(a) Lowering of visor, trips microswitch (M32) to non-uplocked position. With nose gear shock absorber (G321) and RH main shock absorber (G324) extended, solenoids of safety electrovalves (G31, G32) are energized and Normal operation of return and depressurization valves (4012, 4014) is no longer prevented. Hydraulic pressure is available at door selectors (G29, G30).

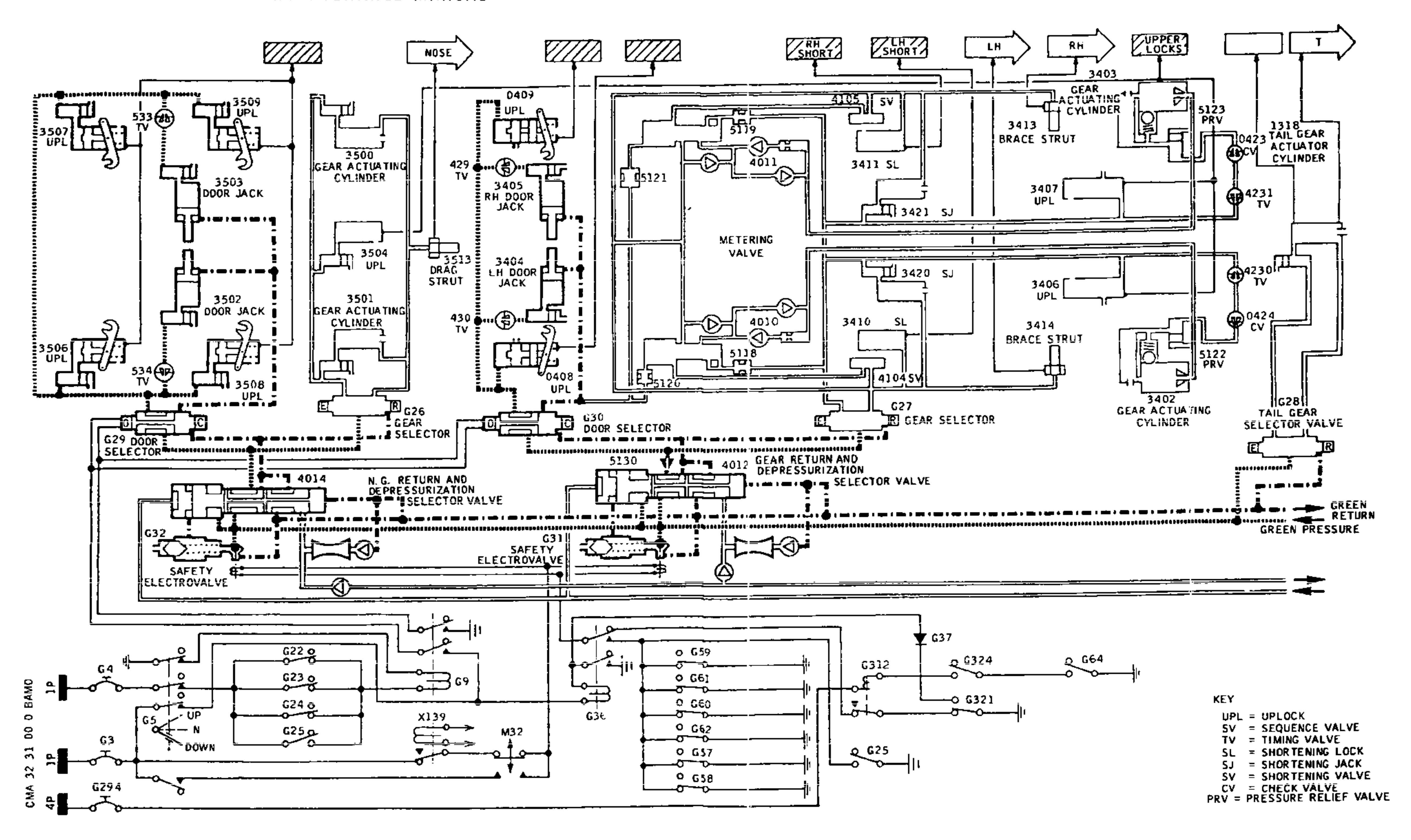
(b) With landing gear Normal control lever in DOWN position LH SHORT, UPPER LOCKS, RH SHORT lights on gears position indicating unit (G52) illuminate.

(c) Door selector (G29, G30) solenoids are energized on opening side if main gears (G23, G24) and nose gear (G22) are not downlocked.

(d) The selectors deliver pressure which simultaneously supplies door uplocks (0408, 0409, 3506, 3507, 3508, 3509) and door actuating jacks (3404, 3405, 3502, 3503). Timing valves (429, 430, 533, 534) located in the door actuating jack pressure lines (Opening side only) enables door uplocks to be released before jacks are pressurized.

(e) Amber UPPER LOCKS, LH SHORT, RH SHORT, lights on gears position indicating unit (G52) as well as

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Gear Extension - Door Opening Sequence
Figure 014

red warning lights corresponding to Green LH, NOSE, RH arrows are illuminated.

(f) At the end of door opening sequence, the doors operate microswitches (1G20, 2G20, G15, G16) which supply the extension side of nose, main and tail gear selector solenoids.
The gear extension sequence is thus initiated after the door opening sequence.
With door solenoids (G29, G30) energized, pressure is maintained on opening side throughout gear extension sequence.

(3) Uplock release and gear extension
(Ref. Fig.001 and 015)

(a) Nose gear, main gear and tail gear door selector (G26, G27, G28) solenoids are energized on extension side if nose gear doors (G15, G16) and main gear doors (1G20, 2G20) are open.

(a1) The selectors simultaneously supply gear uplocks (3406, 3407, 3504) gear actuating cylinders (3402, 3403, 3500, 3501), Shortening jacks (3480, 3421) as well as main gear metering valves (4010, 4011). Tail gear selector (G28) releases tail gear actuating cylinder (1318) and supplies extension side with hydraulic power.

(a2) Timing valves (4230, 4231) located upstream of main gear actuating cylinder pressure lines (extension side only) ensure gear uplock release before pressure is applied to actuating cylinders.

(a3) Two restrictor-check valves (0423, 0424) installed downstream of the timing valves ensure supply of fluid to main gear actuating cylinder extension chamber without cavitation.

(a4) UPPER LOCKS light on gears position indicating unit (G52) is extinguished. The red warning light corresponding to the Green T arrow illuminates. The red warning lights corresponding to the green LH, NOSE RH arrows and amber LH SHORT, RH SHORT lights remain illuminated.

(a5) Under pressure, the pistons of metering valves

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NOSE
RH SHORT
LH SHORT
LH
RH
UPPER LOCKS
T

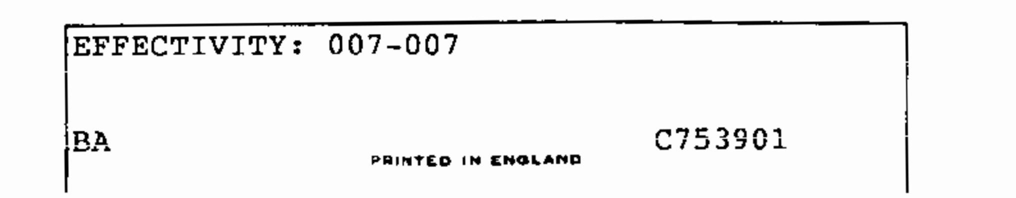
3507 UPL
533 TV
3509 UPL
3503 DOOR JACK
3502 DOOR JACK
3506 UPL
534 TV
3508 UPL
G29 DOOR SELECTOR
3500 GEAR ACTUATING CYLINDER
3504 UPL
3501 GEAR ACTUATING CYLINDER
3513 DRAG STRUT
G26 GEAR SELECTOR
429 TV
430 TV
0409 UPL
3405 RH DOOR JACK
3404 LH DOOR JACK
0408 UPL
G30 DOOR SELECTOR
5121
5119
4011
METERING VALVE
4010
5118
5120
4105 SV
3411 SL
3421 SJ
3420 SJ
3410 SL
4104 SV
G27 GEAR SELECTOR
3413 BRACE STRUT
3407 UPL
3406 UPL
3414 BRACE STRUT
3403 GEAR ACTUATING CYLINDER
5123 PRV
0423 CV
4231 TV
4230 TV
0424 CV
5122 PRV
3402 GEAR ACTUATING CYLINDER
1318 TAIL GEAR ACTUATING CYLINDER
G28 TAIL GEAR SELECTOR VALVE
N.G. RETURN AND DEPRESSURIZATION SELECTOR VALVE
4014
G32 SAFETY ELECTROVALVE
5130
4012 GEAR RETURN AND DEPRESSURIZATION SELECTOR VALVE
G31 SAFETY ELECTROVALVE
GREEN RETURN
GREEN PRESSURE

1P
1P
4P
G4
G3
G294
G5 UP N DOWN
G15
G16
2G20
1G20
G10
X139
M32
G36
G59
G61
G60
G62
G57
G58
G37
G312
G324
G64
G321
G25

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KEY
PRV = PRESSURE RELIEF VALVE
UPL = UPLOCK
SV = SEQUENCE VALVE
TV = TIMING VALVE
SL = SHORTENING LOCK
SJ = SHORTENING JACK
SV = SHORTENING VALVE
CV = CHECK VALVE

Gear Extension - Gear Uplock Release Sequence
Figure 015



(4010, 4011) move from Emergency to Normal position. Travel of piston in each valve is dampened through restrictors (5120, 5121).

Progressive depressurization of main gear actuating cylinders is achieved through restrictors (5118, 5119).

During nose gear extension, velocity of each actuating cylinder (3500, 3501) is controlled by restriction of the return fluid flow. By the end-of-travel, further restriction of the return ports provides for dampening of shocks that are likely to effect the aircraft adjoining structure.

(4) Gear Downlocking.

(a) With gears extended, mechanical downlock is automatically accomplished on nose gear telescopic drag strut (3513) main gear telescopic brace struts (3413, 3414) shortening locks (3410, 3411) and tail gear actuating cylinder (1318).

(b) Green NOSE and T arrows on gears position indicating unit (G52) illuminate, red warning light corresponding to green T arrow extinguishes, green LH and RH arrows illuminate, amber LH SHORT and RH SHORT lights extinguish.

(c) The extension sequence is thus accomplished upon completion of gear downlocking. The door opening side solenoids are no longer energized, however, the closing side is energized through gear and tail uplock microswitches (G22, G23, G24) and gear door uplocked microswitches (G57 to G62). At start of door closing, as soon as one of microswitches (1G20, 2G20, G15, G16) is actuated, gear and tail gear selector solenoids are no longer energized and associated lines are connected to tank return.

(5) Closing and uplocking of doors (Ref. Fig.001 and 016)

(a) Solenoids of door selectors (G29, G30) are energized on closing side provided that nose gear (G22) main gear (G23, G24) as well as tail gear (G55) are downlocked and as long as one of the nose or main gear doors (microswitches G57 to G62) is not uplocked.

INTENTIONALLY BLANK

KEY

PRV = PRESSURE RELIEF VALVE
UPL = UPLOCK
SV = SEQUENCE VALVE
TV = TIMING VALVE
SL = SHORTENING LOCK
SJ = SHORTENING JACK
SV = SHORTENING VALVE
CV = CHECK VALVE

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Gear Extension - Door Closing Sequence
Figure 016


EFFECTIVITY: 007-007

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The selectors directly supply gear door actuating jacks (3404, 3405, 3502, 3503) and main gear metering valves (4010, 4011) in de-activated position and wheel centring pressurization system.

(b) On gears position indicating unit (G52), the red warning lights corresponding to Green LH, NOSE, RH arrows as well as green LH, NOSE, T, RH arrows are illuminated.

(c) The nose gear main doors and main gear main doors are uplocked by uplocks (0408, 0409, 3506, 3507, 3509). A spring rod provides automatic locking of the uplock hook.

(d) On gears position indicating unit (G52), the red warning lights extinguish while Green LH, NOSE, T and RH arrows remain illuminated.
Upon accomplishment of door uplocking the gear extension sequence is completed.

(e) The First Officer places the landing gear Normal control lever (switch G5) in NEUTRAL position. This manoeuvre results in cut off of power to solenoids of door selectors (G29, G30) thus cutting off hydraulic power to doors and gears.

On gears position indicating unit (G52), green LH, NOSE, T, RH arrows remain illuminated.

10. Opening and Closing of Doors on Ground
(Ref. Fig.001 and 017)

A. General

Ground door opening and closing operations are accomplished using the Green hydraulic system.

With aircraft in following configuration :

- Visor lowered,
- Gears and tail gear downlocked, shock absorbers compressed
- All main doors uplocked,
- Landing gear Normal control lever in DOWN position.

There are two separate handles, one controlling opening of main gear main doors and the other opening of nose gear main doors.

B. Opening and Closing of Nose Gear Main Doors

When control handle located on the landing gear door ground opening control unit (microswitch G33) installed on the nose gear leg is actuated, (indicator plate showing red) door selector (G29) closing side solenoid energization circuit is open.

At the same time nose gear door opening relay (G34) is energized, which results in :

- Energization of safety electrovalve (G31, G32), solenoids.
- Energization of door selector (G29) opening side solenoid.

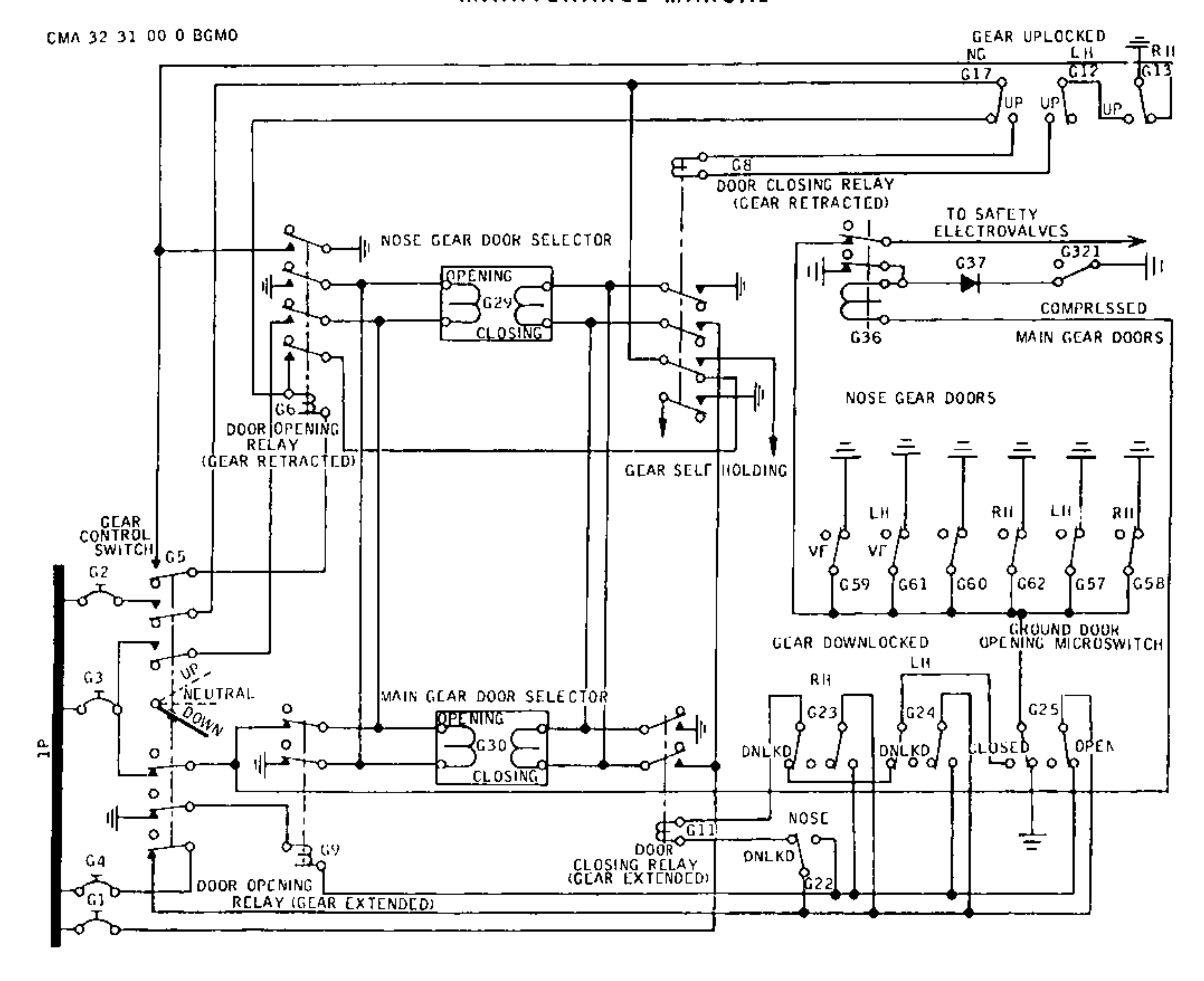
Nose gear main doors open.

At initiation of door opening, microswitches (G59, G60, G61, G62) close thus ensuring in parallel energization of solenoids of safety electrovalves (G31, G32).

When landing gear Normal control lever is placed in NEUTRAL position, door actuating jacks are connected to tank return thereby facilitating specific maintenance tasks.

On gears position indicating unit (G52), the red warning light corresponding to the green NOSE arrow illuminates.

With aircraft in configuration mentioned in foregoing paragraph, door closing is accomplished by returning nose landing gear main door ground opening control handle (microswitch G33) to its initial position (indicator plate showing white). The circuit of nose gear door selector (G29) opening side solenoid is open.



Opening of Doors on Ground
Figure 017

At same time, the circuit of the closing side solenoid is closed and selector (G29) delivers pressure to the nose gear main door actuating jacks (3502, 3503). The doors close.

On gears position indicating unit (G52), the red light corresponding to the green NOSE arrow extinguishes.

C. Opening and Closing of Main Gear Main Doors

When control handle located on the landing gear door ground opening control unit (microswitch G25) installed on the LH main gear leg is actuated, (indicator plate showing red) door selector (G30) closing side solenoid energization circuit is open.

At same time, main gear door opening relay (G35) is energized, which results in :

- Energization of safety electrovalve (G31, G32), solenoids.
- Energization of main gear door selector (G30) opening side selector.

Main gear doors open.

At initiation of door opening, microswitches (G57, G58) close, thus ensuring in parallel energization of solenoids of safety electrovalves (G31, G32).

When landing gear Normal control lever is placed in NEUTRAL position, door actuating jacks are connected to tank return thereby facilitating specific maintenance tasks.

On gears position indicating unit (G52), the red warning lights corresponding to Green LH, RH arrows illuminate.

With aircraft in configuration mentioned in foregoing paragraph, door closing is accomplished by returning main gear main door ground opening control handle to initial position (indicator plate showing white). The circuit of main gear door selector (G30) Opening side solenoid is open.

At same time, the circuit of the closing side solenoid is closed and selector (G30) delivers pressure to the main gear main door actuating jacks.

The doors close.

On gears position indicating unit (G52), the red warning lights corresponding to Green LH, RH arrows extinguish.

On indicating unit (G52), lights corresponding to green LH, NOSE, RH arrows extinguish.

11. Electrical Power Supplies

Normal landing control indicating is powered through 28 VDC.

SERVICE	BUSBAR	C/B PANEL
Normal Gear Control	A/MAIN 1P	15-215
Landing Gear Position Indicating	A ESS 3P	1-213
Indicating Flap Lighting Relay Associated with Shock Absorbers and Landing Gears	B ESS 4P	3-213

NORMAL EXTENSION AND RETRACTION - DESCRIPTION AND OPERATION

1. General
(Ref. Fig. 001)

A. The power required for Normal operation of the landing gear is supplied by the Green hydraulic system. Extension and retraction of landing gear is electrically controlled through switch (G5) located on First Officer's panel. The control lever of switch (G5), "Landing Gear Normal Control Lever" can be placed in one of three positions : UP, NEUTRAL, DOWN.

When the lever is moved from NEUTRAL position to DOWN or to UP, the solenoids on the landing gear door electro-hydraulic selectors are energized.

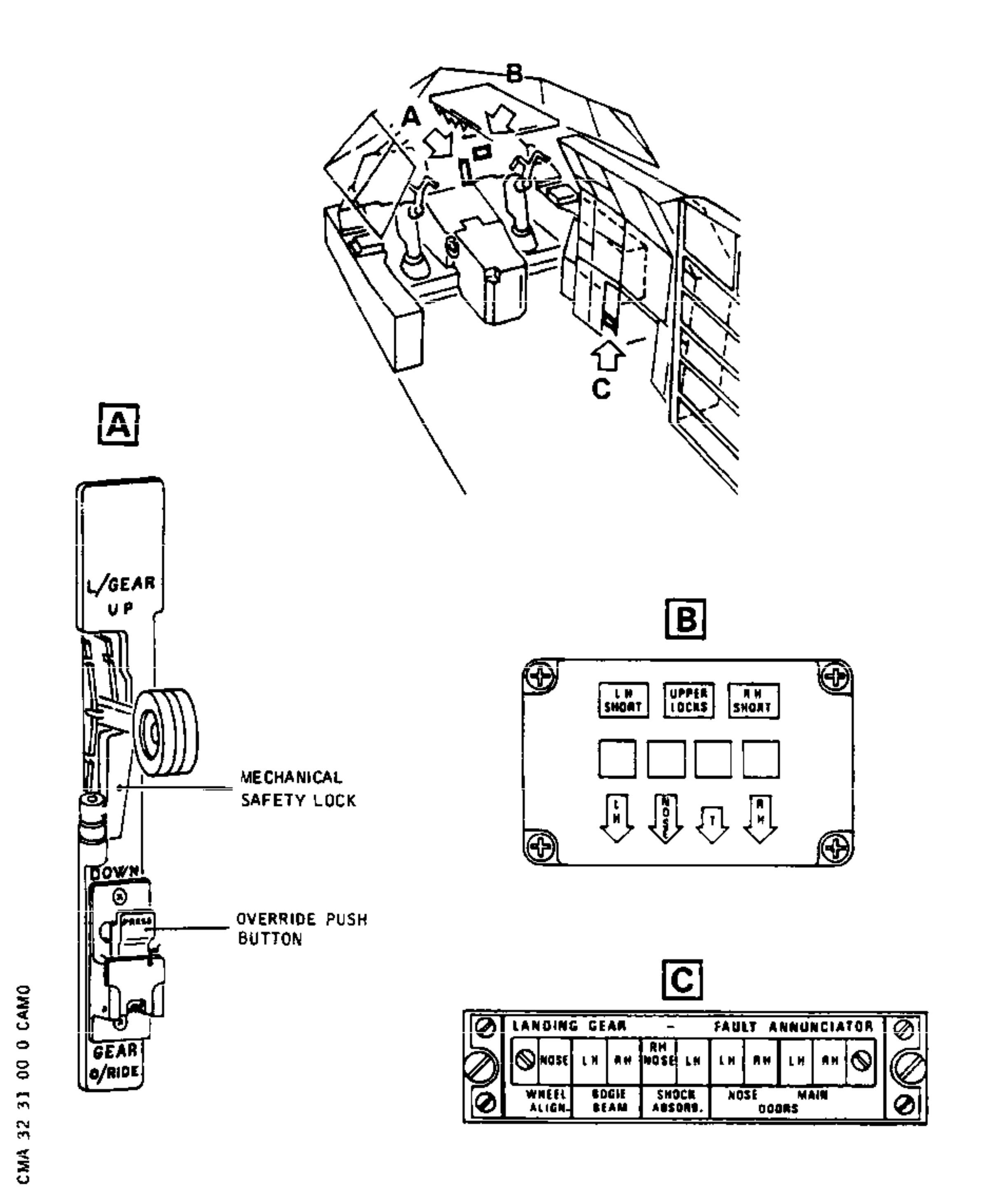
B. A mechanical safety stop positioned beneath the landing gear Normal control lever prevents inadvertent extension of the landing gear in flight when lever is moved from UP to NEUTRAL position.

C. On the ground, a mechanical lock prevents movement of the landing gear Normal control lever to UP position. If need be, this lock can be overridden by means of a pushbutton included in the switch unit.

D. In flight, an electro-hydraulic safety lock prevents gear extension if the visor is uplocked.

E. Gears position indicating unit (G52) located on First Officer's panel includes lights which indicate the various landing gear retraction/extension phases.

F. FAULT ANNUNCIATOR (G81) located on Flight Engineer's panel, indicates, in the event of landing gear retraction failure, the landing gear retraction phase in which failure occurred (Ref. Landing Gear and Doors Indicating 32-61-00, Description and Operation).



Normal Extension and Retraction
Controls and Indicating
Figure 001

2. Description

The main units supplied by Green system during Normal gear extension and retraction are as follows :

A. Two safety electrovalves : (G31, G32)

The safety electrovalves prohibit landing gear retraction if the shock absorbers are compressed (aircraft on ground) and landing gear extension if the visor is uplocked. They isolate the landing gear Normal extension system if one of the ram air turbine uplock release control switches is in ON or TEST position.

(1) Main gear safety electrovalve (G31) located in Zone 151-152 is accessible through door 151DB.

(2) Nose gear safety electrovalve (G32) located in the nose gear bay, LH side.

B. Two door selectors : (G29, G30)

The two selectors deliver control pressure to gear doors and ensure return to tank.

(1) Nose gear door selector (G29) is located in the nose gear bay, LH side.

(2) Main gear door selector (G30), located in Zone 151-152, is accessible through door 151DB.

C. An actuating jack for each door :

- (3404, 3405) main gear main doors,
- (3502, 3503) nose gear main doors.

D. Six Door Uplocks : (0408, 0409, 3506, 3507, 3508, 3509)

Uplocking is mechanical, uplock release is hydraulic or mechanical.

Each door uplock includes an uplock release jack which serves for uplock release of gear doors during Normal and Emergency operation and an Ultimate Emergency mechanical door opening control.

(1) An uplock (0408, 0409) for each main gear main door.

(2) Two uplocks (3506, 3508) for nose gear LH main door.

(3) Two uplocks (3507, 3508) for nose gear RH main door.

E. A Timing Valve for Each Door :

- (533, 534) nose gear doors,
- (429, 430) main gear doors.

F. Three Gear Selectors : (G26, G27, G28)

The selectors deliver control pressure to landing gear and ensure return to tank.

(1) A nose gear selector (G26) located in nose gear bay, LH side.

(2) A main gear selector (G27) located in Zone 151-152 which is accessible through door 151DB.

(3) A tail gear selector (G28) located in tail gear bay.

G. An actuating Cylinder for Each Gear : (3402, 3403, 3500, 3501, 1318).
These actuating cylinders include built-in end-of-travel restriction.

(1) Two actuating cylinders (3500, 3501) are installed in parallel and operate the nose gear.

(2) Each main landing gear actuating cylinder (3402, 3403) includes a pressure relief valve (5122, 5123) installed at and connected into the actuating cylinder retraction side.
The pressure relief valves smooth out pressure peaks at start of cylinder extension under high load factor.

(3) Tail gear actuating cylinder (1318) acts as a strut and includes an internal locking mechanism at each end. Lock release is hydraulic.

H. A Nose Gear Telescopic Drag Strut (3513) and Main Gear Telescopic Brace Struts (3413, 3414).

(1) The nose gear telescopic drag strut and main gear telescopic brace struts serve for gear downlocking.

(2) Downlocking is mechanical. Downlock release is hydraulic.

I. An Uplock for Each Gear : (3406, 3407, 3504)

(1) Uplocking is mechanical, uplock release is hydraulic or mechanical.

(2) Each gear uplock includes an uplock release jack which serves for uplock release of gears during Normal and Emergency operation.

(3) Each uplock incorporates an Ultimate Emergency gear extension mechanical control.

J. A Shock Absorber Shortening Jack for Each Main Gear : (3420, 3421)

(1) These jacks assist during initiation of main gear movement.

K. A Shortening Lock for Each Main Gear : (3410, 3411)

(1) Installed on each main gear leg, they mechanically downlock the gear shortening system. Downlock release is hydraulic.

L. A sequence Valve on Each Shortening Lock : (4104, 4105)

(1) These valves enable main gears to be retracted as soon as the shortening lock is released.

M. A Timing Valve on Each Main Gear : (4230, 4231) located in the associated main gear bay.

(1) These valves enable uplock release to be achieved before pressure is admitted to the actuating cylinder.

N. A restrictor-check valve (0423, 0424) located downstream of each timing valve ensures optimum pressurization of each extension-side chamber in each main gear actuating cylinder.

O. A Metering Valve for Each Main Gear : (4010, 4011) located in the associated main gear bay.

(1) Variable metering slows down main gear at end-of-retraction.

P. Two restrictors (5118, 5119, 5120, 5121) located at each metering valve slow down the movement of the metering valve spool during main landing gear extension.

Q. Two Return and Depressurization Selector Valves : (4012, 4014).

These valves located upstream of door and gear selectors are only operative during Emergency and Ultimate Emergency gear extension.

They cut off Green system pressure to the selectors, and connect selector supply and return to Yellow hydraulic tank.

NOTE : A pipe equipped with non-return valve and a restrictor is installed between the Yellow tank return and the Green tank return of each selector to prevent fluid transfer from Green hydraulic system to Yellow hydraulic system due to thermal expansion.

(1) Main gear return and depressurization selector valve (4012) located in Zone 151-152 is accessible through door 151DB.

(2) Nose gear return and depressurization selector valve (4014) is located in the nose gear bay, LH side.

3. Selectors - Main Gear and Door (G27, G30)
(Ref. Fig. 002)

A. General

The main gear and main gear door selectors are identical. They are both electrically remote controlled.
The main gear door selector which is supplied with Green system pressure serves for main gear door opening and closing. The main gear selector which is supplied with Green system pressure serves for main gear extension and retraction.

NOTE : The restrictor check valve (5130) serves to prevent untimely uplock release of the gear doors during depressurization of the landing gear hydraulic system following selection of landing gear normal control lever to neutral position (following landing gear retraction).

B. Description

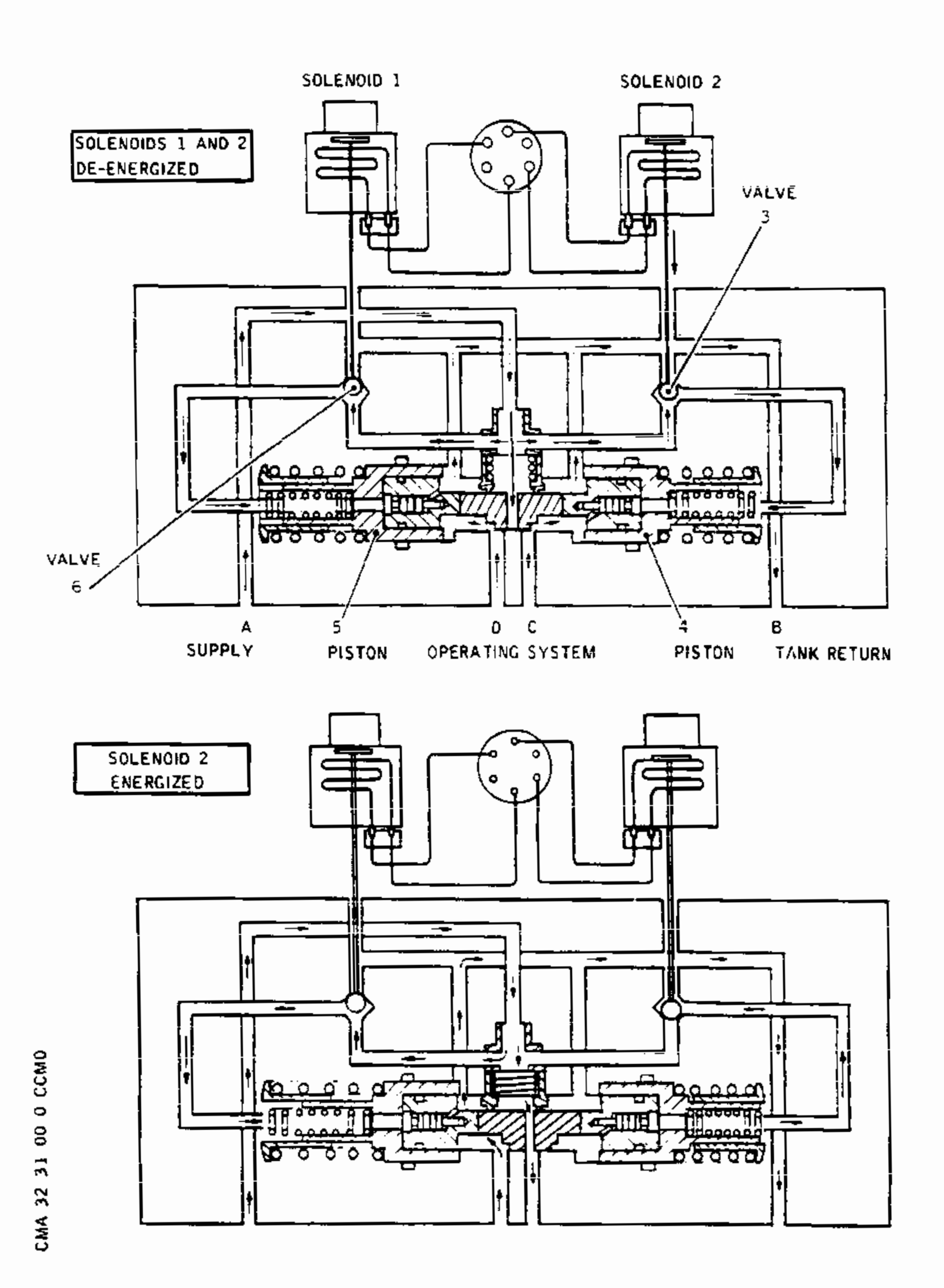
Each selector controls pressure to main gear or door system and ensures return to tank. The selectors include a body with integral supply port (A) return port (B) connected to tank return, and delivery ports (D, C). Two solenoids (1, 2) installed on the selector body each controlling a pilot valve (3, 6) which serves to supply or to cut off hydraulic pressure acting on pistons (4, 5).

C. Operation

(1) When solenoid (2) is energized, valve (3) is closed and pistons (4, 5) move in response to pressure applied to piston (5).
Pressure is supplied through port (C) whilst port (D) is automatically connected to tank return (B).

(2) Reverse action is achieved when solenoid (1) is energized. Pistons (4, 5) move in response to pressure applied to piston (4). Pressure is supplied through port (D) to gear or door operating system whilst port (C) is connected to tank return (B).

(3) When solenoids (1, 2) are de-energized, pistons (4, 5), which are then only subjected to spring pressure, move to intermediate position. Thus ports (D, C) are connected to tank return (B).



Main Gear and Door Selectors
Figure 002

4. Actuating Cylinder - Nose Gear (3500, 3501)
(Ref. Fig. 003)

A. General

Two identical hydraulically operated actuating cylinders serve to retract and to extend the nose gear. The eye-end fitting of each actuating cylinder is connected to the structure by a universal joint whilst the actuating cylinder rod is connected to the gear leg brace struts by an adjustable fork-end fitting which serves to adjust the rod to required length. Stops prevent the cylinder from bottoming when installed on aircraft.

B. Description

The actuating cylinder is of the double-acting type and mainly includes :

(1) A cylinder.

(2) A cylinder end-assembly incorporating an internal nozzle and check valve and an external rod extension hydraulic supply connector (gear retraction).

(3) A cylinder end-assembly fitted with an external manifold. The manifold incorporates the rod retraction hydraulic supply connector (Normal and Emergency gear extension).

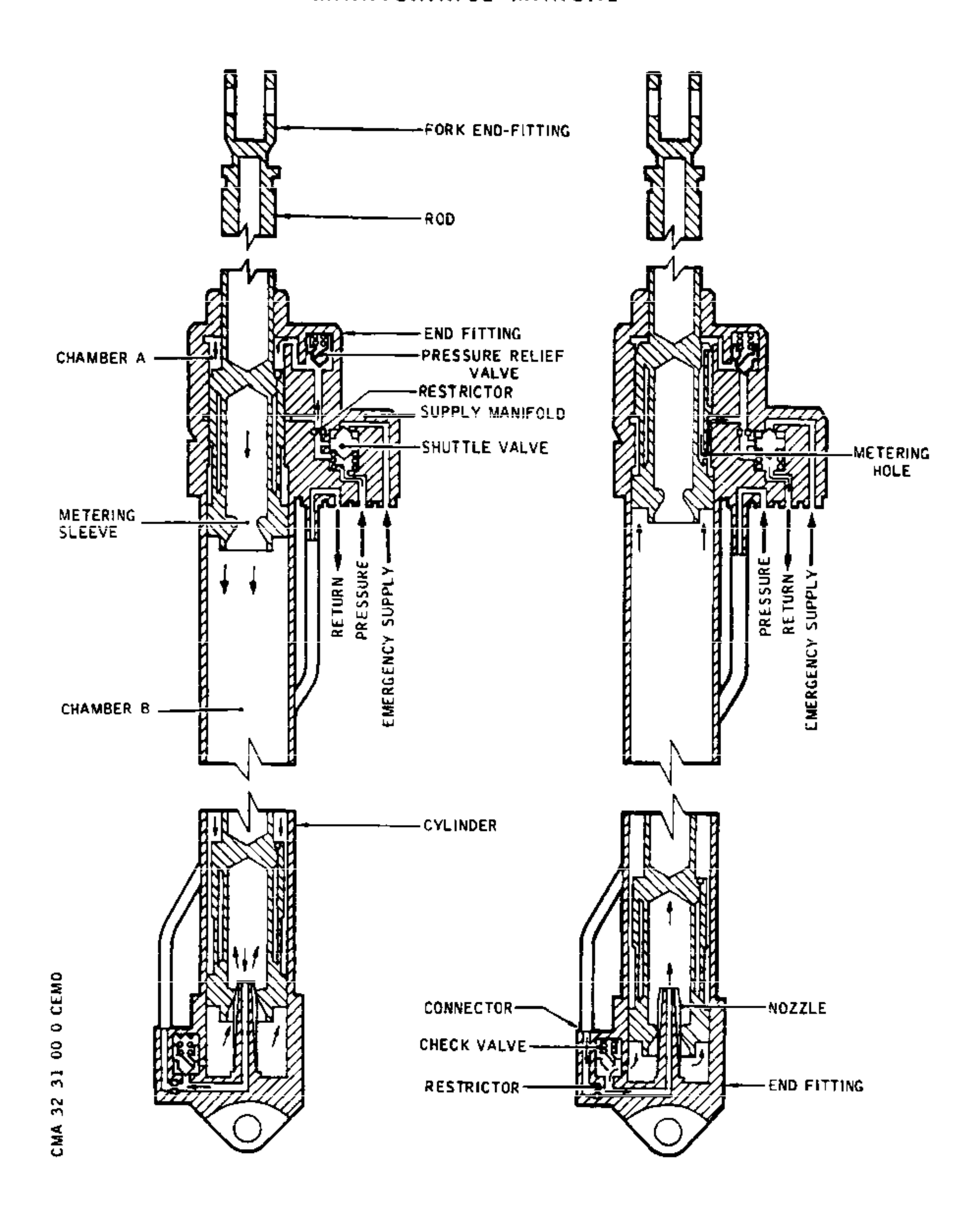
A shuttle valve prevents interconnection between Normal and Emergency systems.
A pressure relief valve which acts as a check valve during the gear retraction phase.

(4) A rod including an internal piston with metering holes. The outer end of this rod is fitted with an adjustable fork-end fitting by which the rod is set to length at time of installation on aircraft.

C. Operation

(1) Actuating cylinder rod retraction (Gear Extension)

In the event of failure of the Normal supply system, the shuttle valve enables the actuating cylinder to be supplied from the Emergency system independent of the Normal system. The Emergency system pressure acts on the shuttle valve incorporated in the supply manifold providing pressure to chamber (A). The piston moves and thus displaces the rod.



Nose Gear Actuating Cylinder
Figure 003

Hydraulic fluid in chamber (B) is expelled.
End-of-travel damping of the rod during rod retraction is achieved when fluid passage through the metering sleeve is restricted by the nozzle.

(2) Actuating cylinder rod extension (Gear Retraction)

Emergency power is not provided for rod extension. For this reason pressure is only supplied through one port. Pressure delivered through that port acts on a valve embodied in the end fitting supplying pressure to chamber (B). Pressure is simultaneously applied to the piston and to the rod end bore via the nozzle.
Displacement of the rod results in fluid being expelled from chamber (A). End-of-travel slowdown is accomplished by fluid passage being restricted to metering holes.

5. Strut - Nose Gear Telescopic Drag (3513)
(Ref. Fig. 004)

A. General

The nose gear telescopic drag strut provides fore-and-aft bracing of the nose gear leg in downlocked position. The strut hinges on the aircraft structure through a universal joint.
The lower end of the strut is directly connected to the leg by a swivel pin.

B. Description

The telescopic drag strut mainly includes :

(1) Two concentric steel rods sliding in a light alloy cylinder serving as a guide during extension phase. Movement of the rods is controlled by the gear leg which is actuated by two hydraulic actuating cylinders.

(a) The end of the inner sliding rod adjacent to aircraft structure engages with the downlock fingers. The rod end-fitting adjacent to the gear leg serves for strut-to-leg attachment by means of a pin.

(b) The intermediate sliding rod is moved by means of a bush attached to that rod. A stop integral with the cylinder, limits intermediate rod end-of-travel. A stop installed at the end of the rod serves for retraction of the intermediate rod during rod retraction phase.

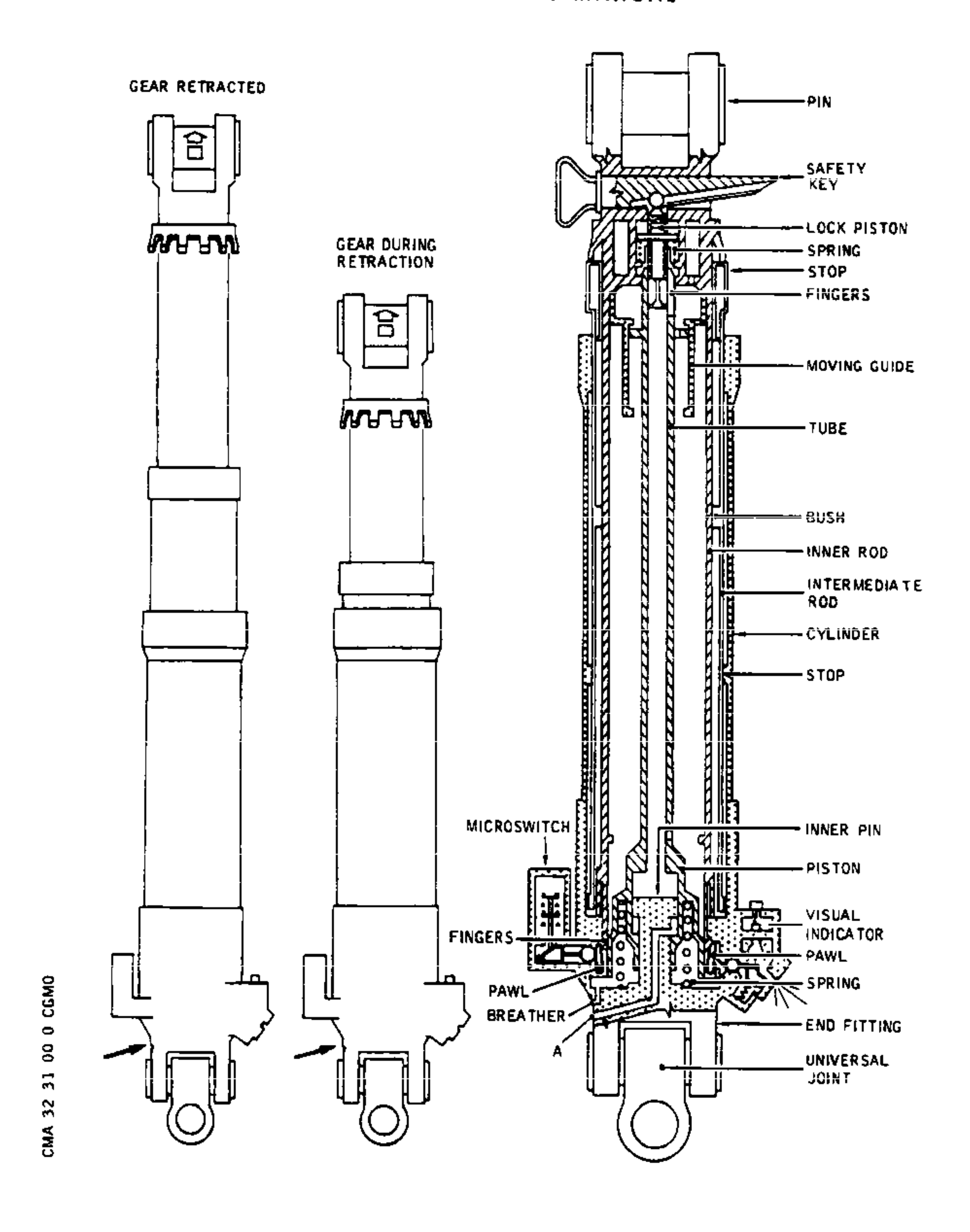
(2) Two ground downlock finger safety assemblies

(a) The manually controlled ground downlock finger safety assembly engages with the inner rod end fitting. The manual ground downlock assembly includes :

- A manual ground downlock safety key
- A downlock piston
- A spring.

(b) The downlock safety assembly adjacent to aircraft structure includes :

- A lock piston with extension tube dependent on the manually controlled ground downlock safety assembly



Nose Gear Telescopic Drag Strut
Figure 004

- A piston return spring
- An end fixed lock-bushing
- Lock fingers integral with inner rod
- A moving guide providing centring and alignment of rod until until full extension of strut has been achieved.
- Two pawls pivoting on the piston which actuate the visual indicator and the microswitch respectively
- The piston is prevented from rotating by a hollow pin installed at the end. The hollow pin acts as a breather.

C. Operation

(1) Extension of rods

When the ground downlock safety key is removed the manually controlled ground downlock safety assembly is released and the return spring causes the piston to move thus releasing the lock fingers.

Release of the downlock safety assembly adjacent to aircraft structure is thence possible. Hydraulic pressure delivered through port A causes the piston to move and compress the return spring thereby releasing the lock fingers.

Retraction of the gear causes the inner rod to extend and thus free the lock fingers from the associated lock-bushing. The inner rod moves the intermediate rod at end-of-travel.

(2) Retraction of rods

Gear extension causes the inner rod and the intermediate rod to retract. Movement continues until gear is fully extended. Downlocking of safety assembly adjacent to structure is thus accomplished automatically. The lock fingers located on the inner rod move back the piston and engage with the associated lock-bushing. The piston under the action of the return spring returns to its initial position, engaging the lock fingers. This action causes the downlock safety lock fingers adjacent to the gear leg to engage with the associated lock-bushing.

The two pawls located on the locking piston simultaneously actuate the visual indicator and the nose gear downlocked microswitch. Installation of the manual ground downlock safety key causes the locking piston

to bottom and to be immobilized.

(3) Ground safety (Ref. Fig. 005)

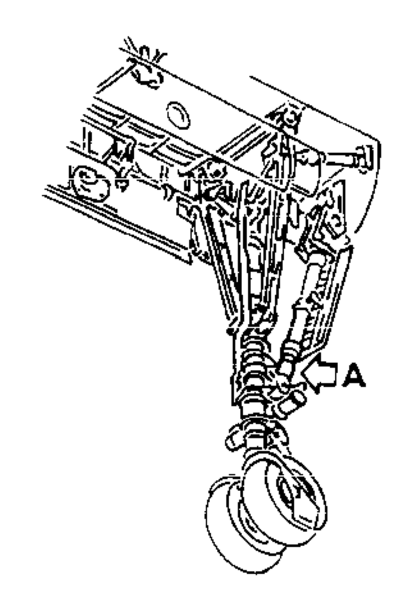
(a) An internal safety feature prevents installation of safety key C22127 with gear in down position if the telescopic drag strut is not locked.

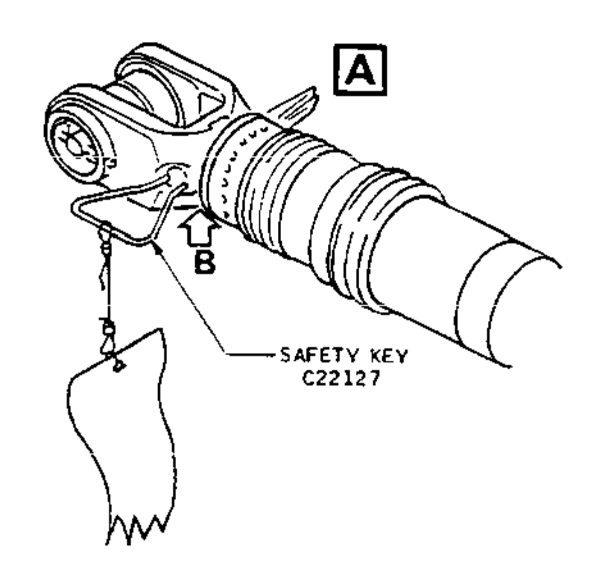
(b) Installation of safety key C22127 with telescopic drag strut locked.

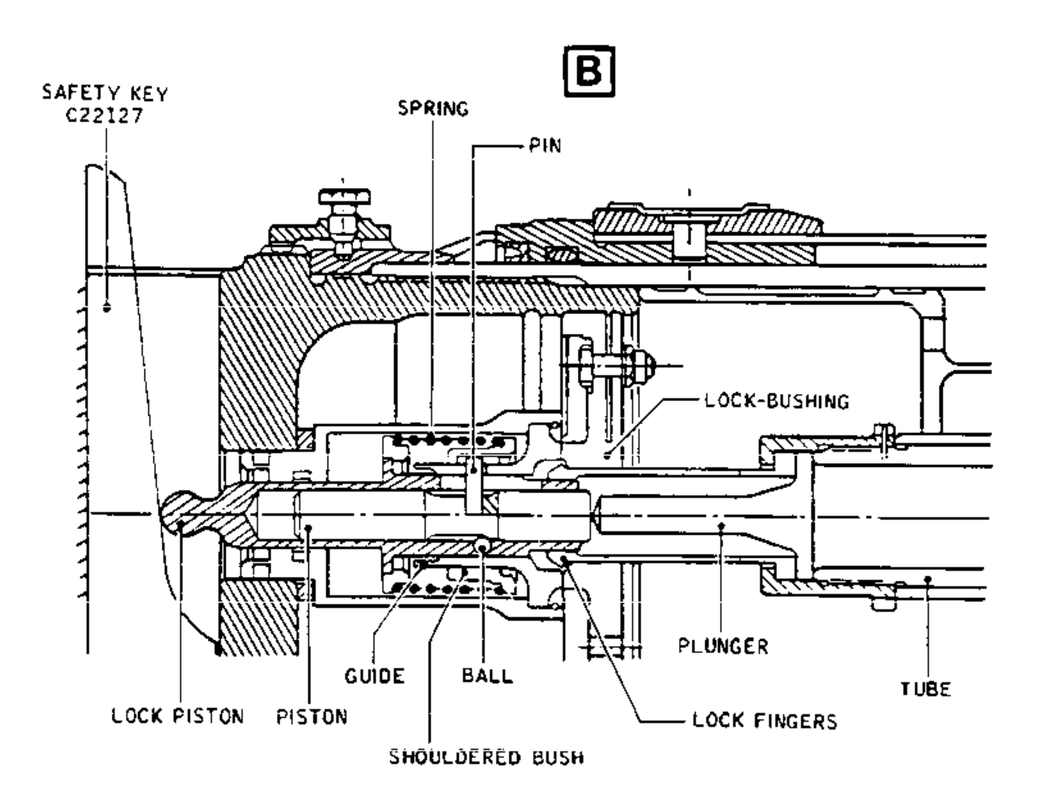
The lock fingers are engaged in the lock-bushing. The plunger attached to the tube loads the piston on its stop thus aligning the piston throat and the guide ramp and permitting the passage of the balls. The lock piston is loaded against the drag strut body by means of the spring. The four balls are located between the guide ramp and the piston throat. Insertion of safety key C22127 displaces the lock piston which drives the balls out of the guide ramp and along the piston throat. With the safety key fully inserted the lock piston is in stop position; the end of the lock piston comes between the lock fingers and the piston thus positively locking the drag strut.

(c) Safety key C22127 installation inhibition with telescopic drag strut not locked.

When the telescopic drag strut is not locked, the lock fingers are not engaged in the lock-bushing. The plunger attached to the tube does not contact the piston. The spring loads the piston via the pin and shouldered bush. The four balls are located between the guide ramp and the piston. The guide ramp and the piston throat are not aligned, the four balls can no longer be driven out of the guide ramp and insertion of safety key C22127 is inhibited.







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Locking Mechanism
Figure 005

6. Strut - Main Gear Telescopic Brace (3413, 3414)
(Ref. Fig.006 and 007)

A. General

The main gear telescopic brace strut provides lateral bracing of each main gear leg in downlocked position.

The strut is actuated by the movement of the gear leg and plays no part in either gear retraction or extension.

However, the strut includes a pneumatic actuator for use in Ultimate Emergency, operated by aircraft hydraulic system tank pressurization air.

The strut incorporates an internal rod downlocking system. Downlocking is automatic and fully mechanical. Downlock release is accomplished hydraulically.

B. Description

The brace strut mainly includes :

(1) A cylinder containing a hollow sliding rod

(a) The brace strut cylinder end is attached to the aircraft structural reinforcement fitting by means of a trunnion fitting.

(b) The sliding rod includes a spherical eye-end fitting attaching to a gear leg fork fitting. This adjustable eye-end fitting serves for perpendicular setting of the gear leg.

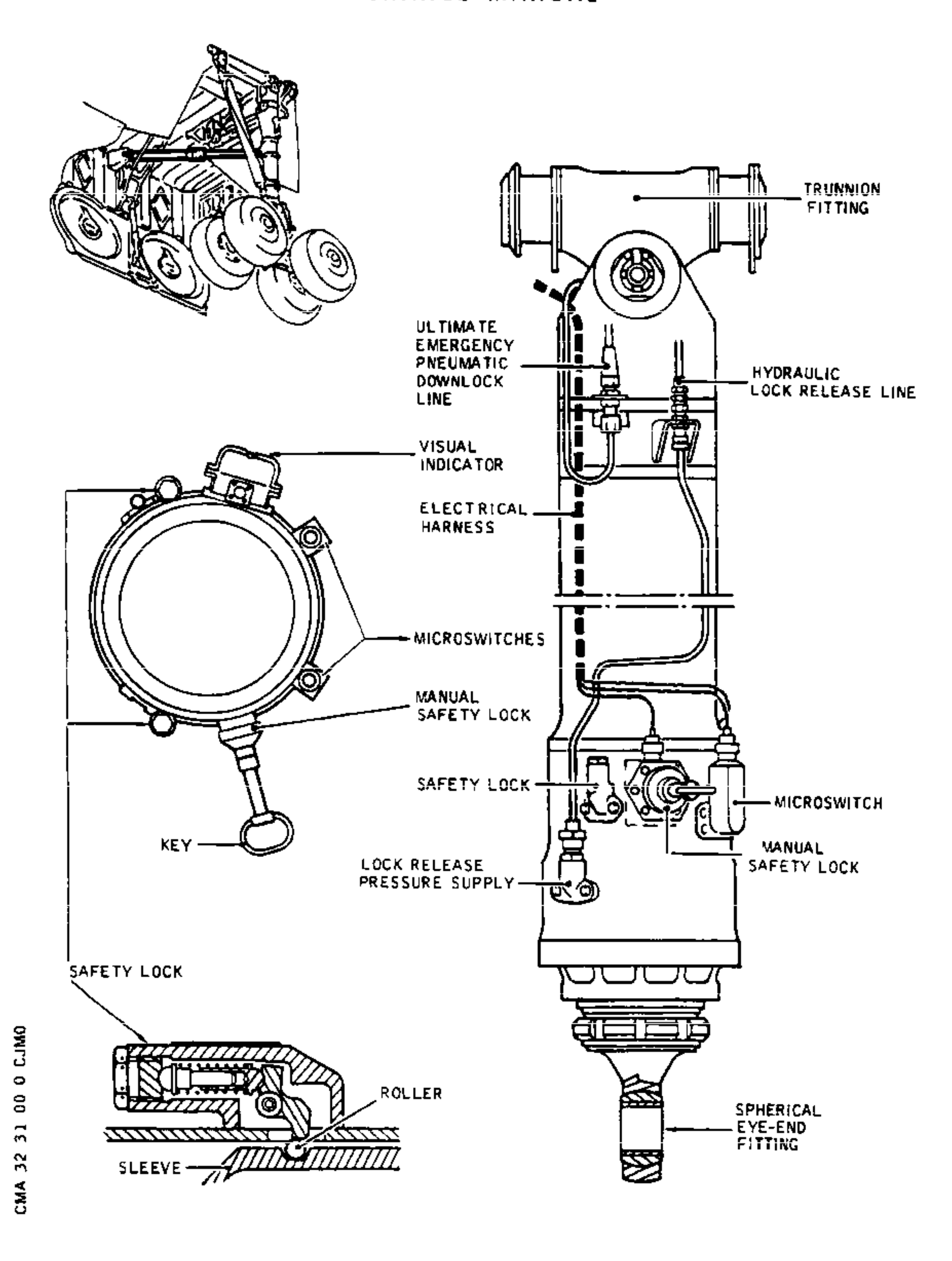
(2) A downlocking system which includes :

(a) An annular lock comprising ten radial segments separated by dividing blocks and retained by an internal spring clip.

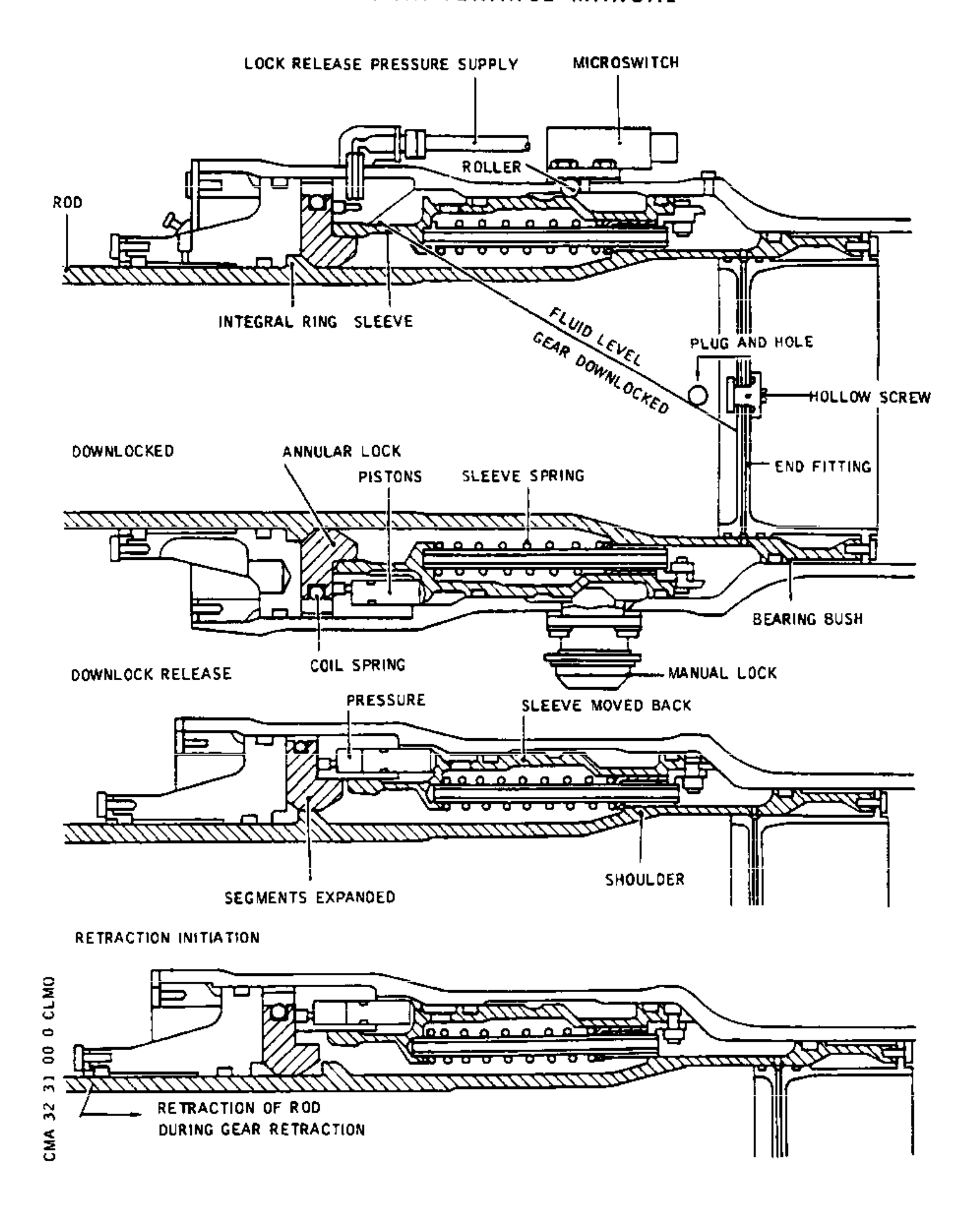
(b) A sleeve concentric with the rod and sliding in the cylinder. This sleeve includes a taper bore front section serving to positively lock the annular lock against the rod integral ring.

(c) A set of pre-loaded coil springs which tends to compress the sleeve in the lock direction.

(d) An annular hydraulic jack containing nine sleeve lock-release pistons.



Main Gear Telescopic Brace Strut - Description
Figure 006



Main Gear Telescopic Brace Strut - Operation
Figure 007

(3) A side hole closed off by a plug. This hole serves for injection of hydraulic fluid into the downlocking system annular chamber to provide lubrication of locking mechanism as well as rod bearing bush.

In the event of leakage at the annular jack pistons, the fluid collects in the annular downlocking chamber. A hole at the bottom of the rod running across a hollow screw serves for evacuation of excess fluid into the end of the rod forming a low point. A plug installed in the spherical end fitting enables such leakage to be detected.

(4) Two safety locks

Each of the locks is spring-loaded against a roller which serves to maintain the sleeve in lock-released position.

(5) A manual key-operated ground safety lock serving to immobilize the sleeve in locked position.

(6) A visual indicator.

(7) Two microswitches actuated by a roller coming into contact with the sleeve.

These microswitches are connected into the indicating circuit as well as the gear retraction electrical sequence channel.

(8) An electrical harness supplying electrical power to the microswitches and visual indicator.

(9) A downlock release hydraulic supply line.

(10) An air supply line connected to the bottom of the strut cylinder.

C. Operation

(1) Hydraulic downlock release and retraction of gear

Green pressure is applied to the annular jack and the pistons move the sleeve thereby compressing the springs. The lock is released, movement of the sleeve actuates the gear downlocked microswitches.

The gear leg retracts moving the strut rod in retraction direction, the rod 45^{o} lead intregral ring rides along the segment tapered-ramp and expands the

segments. As the sleeve moves the sleeve-springs gradually expand and the sleeve comes to rest in lock-released position, where it is maintained by the safety locks. The lock segments contract under the action of the spring clip.

With the gear uplocked, the annular jack is no longer pressurized, and the pistons remain in contact with the sleeve.

(2) Extension of gear and mechanical downlocking

Gear extension causes the strut rod to extend. As soon as the shoulder of the rod reaches the sleeve, the compressed springs move the sleeve towards the lock. Simultaneously the rod integral ring rides along the segment tapered-ramp and the segments contract.

As soon as the sleeve has passed through the lock, the lock segments contract under the action of the spring clip as well as under the more positive action of the sleeve taper bore front section (collet-type spring-loaded action). With the sleeve in locked position the microswitches move to de-activated position.

(3) Ground safety locks

With the strut downlocked the sleeve may be mechanically immobilized by inserting the ground safety key.

Accidental operation of the retraction system is therefore impossible since the strut is positively downlocked.

(4) Pneumatic downlocking

In case of Ultimate Emergency gear extension (extension under free-fall action) downlocking can be achieved automatically.

Whenever downlocking is not accomplished under free-fall action, pressurized air is ported into the strut cylinder. The end of the rod acts as a pneumatic piston. The rod is thus moved to downlocked position.

7. Uplock - Main Landing Gear Door (0408, 0409)
(Ref. Fig. 008)

A. General

Two identical uplocks ensure gear door uplocking in gear uplocked or downlocked configuration. Doors are held in this position until the uplock release order is given.

In each uplock a spring-loaded hook achieves door uplock.

An actuating cylinder containing two tandem-mounted pistons serves for hydraulic release of the hook.

In Normal operation one of the pistons is operated by the Green hydraulic system.

In Emergency operation the other piston is operated by the Yellow hydraulic system.

An independent manual control serves for uplock release during Ultimate Emergency door opening.

The gear door uplocked microswitch on the uplock is activated and warning light alerts crew when uplock fails to operate.

B. Description

The uplock unit includes :

(1) An actuating cylinder containing two tandem-mounted pistons :

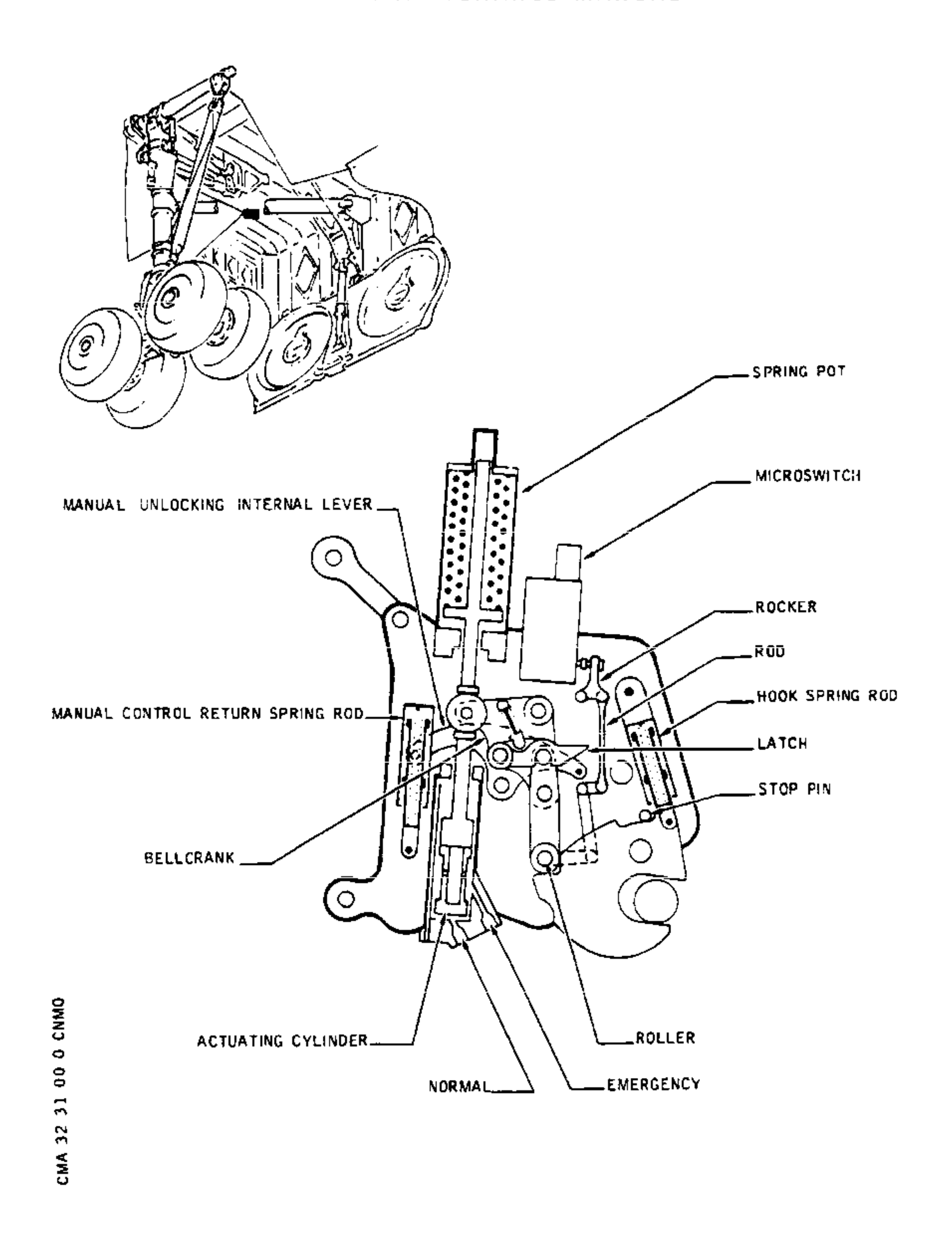
One operated by Green pressure (Normal operation) and the other by Yellow pressure (Emergency operation).

(2) A spring pot provides return pressure for the actuating cylinder. This pot includes a shock damper which absorbs shocks during uplock release.

(3) The hook uplock system consists of a bellcrank, fitted with a roller, comprising two non-aligned levers and a latch. This system ensures hook uplock and hook manual release in Ultimate Emergency operation.

During Normal and Emergency operation the latch locks the two levers together.

During Ultimate Emergency operation the latch is released thus unlocking the levers.



Main Landing Gear Door Uplock
Figure 008

(4) A hook maintained in released position by a spring rod.

In uplocked position the bellcrank roller bears against the upper part of the hook.

(5) A splined shaft whose outer end connects to the Ultimate Emergency manual control lever. The inner end of this shaft is connected to a spring-rod loaded lever. This spring-rod enables the Ultimate Emergency system to be reset to neutral.

(6) A rod and rocker mechanism connected to the bellcrank actuates a microswitch.

C. Operation

(1) Uplock release

Green system pressure delivered to the uplock unit inlet port powers the actuating cylinder which moves the bellcrank and compresses the spring pot. The bellcrank roller frees the hook which pivots under the weight of the doors.

The hook moves to the end-of-travel position and is held there by the hook spring-rod.

When Green pressure is no longer applied, the spring pot loads the bellcrank against the hook and the roller moves into a groove in the hook thus creating a hard spot (overcentre effect).
The movement of the bellcrank causes the rocker to rotate and free the microswitch plunger. The microswitch signals that the hook is released.

(2) Closing - Uplocking

During door closing, the uplock-roller bears against the upper jaw of the hook causing the hook to move upwards. The bellcrank-roller then locks the hook under the action of the spring pot.

8. Valve - Main Gear Metering (4010, 4011)
(Ref. Fig. 009)

A. General

Two identical metering valves are installed in the main gear bays. Each valve installed in the main gear actuating cylinder supply system serves as follows :

- To cut off hydraulic power to the main gear actuating cylinder while the associated shortening lock is in locked position.
- Slow down main gear movement at end-of-uplock sequence.

B. Description

The metering valve includes :

- A body in which slides a piston. The piston is hydraulically controlled through Green system pressure and is maintained in de-activated position under spring pressure.
- A plunger, operated mechanically through a roller installed on a bellcrank pivoting under the action of the actuating cylinder, slowing down main gear actuating cylinder at end-of-travel during landing gear retraction.
- Four check valves.

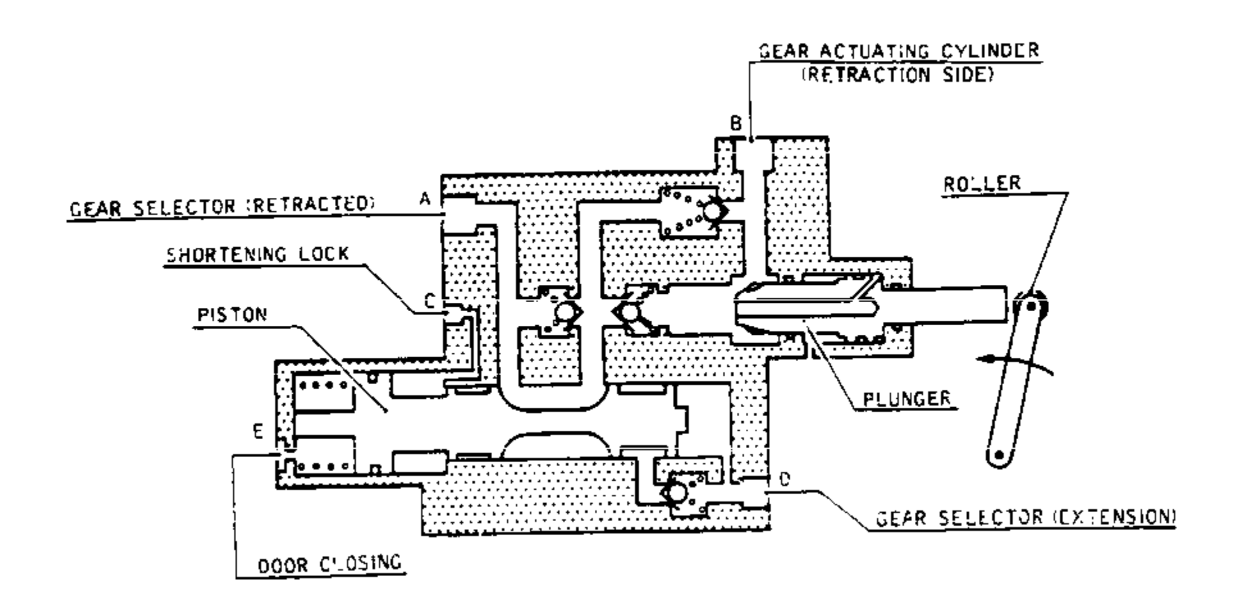
C. Operation

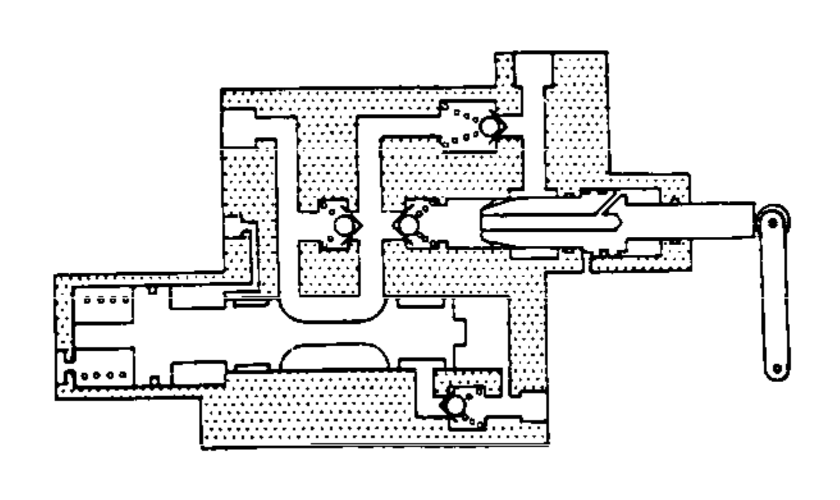
With aircraft on the ground and the landing gear Normal control lever in DOWN position the valve piston is maintained in de-activated position under spring action in addition to door closing Green hydraulic pressure.

(1) Gear retraction

With the landing gear Normal control lever in UP position, the valve piston is maintained in de-activated position throughout the door opening sequence under spring pressure. Pressure is available at port A. As soon as the shortening lock is released the corresponding sequence valve delivers pressure to port C. The valve piston moves to selected position and the spring is compressed. Interconnection between ports A and B is cut off and Green system pressure is ported from A to B. At start of gear retraction the plunger is not depressed and fluid is therefore not metered between port A and port B.

When the gear has moved through an arc of 78 degrees, the plunger controlled by the roller is depressed





CMA 32 31 00 0 CQM0

Main Gear Metering Valve
Figure 009

until the gear reaches an arc of 88 degrees 50 minutes and fluid flow from A to B is gradually restricted.

Metering of the fluid slows down the gear at moment of uplock.

As soon as gear is retracted, the valve piston returns to deactivated position under the combined action of the spring and door closing Green system pressure delivered to port E.

Main gear actuating cylinder pressure (retraction side) is thus relieved through port D.
When the landing gear Normal control lever is placed in NEUTRAL position ports A, C and E are connected to tank return.

(2) Gear extension

During gear extension sequence, Green system pressure is delivered simultaneously to the extension side of the gear actuating cylinder and through valve port D. The valve-piston moves from de-activated position to selected position.

Return fluid from the gear actuating cylinder flows from part B to A.

With gear downlocked, port D is connected to tank return. The valve piston returns to de-activated position under combined action of the spring and door closing Green system pressure delivered to port E.

9. Operation-Normal Extension and Retraction

When the solenoids of the safety electrovalves (G31, G32) are energized the pistons of return and depressurization selector valves (4012, 4014) are moved by Green system pressure thus pressurization gear door selector valves (G29, G30) and gear selector valves (G26, G27) and connecting return pressure to Green hydraulic tank.

The triple valve with depressurization valve (4303) as well as the depressurization valve (1017) and dual valve (0512) only operate when Ultimate Emergency gear extension procedure is adopted.

A. Retraction
(Ref. Fig.001 and 010)

(1) General

(a) The landing gear Normal control lever may be moved between DOWN and NEUTRAL positions irrespective of landing gear position.

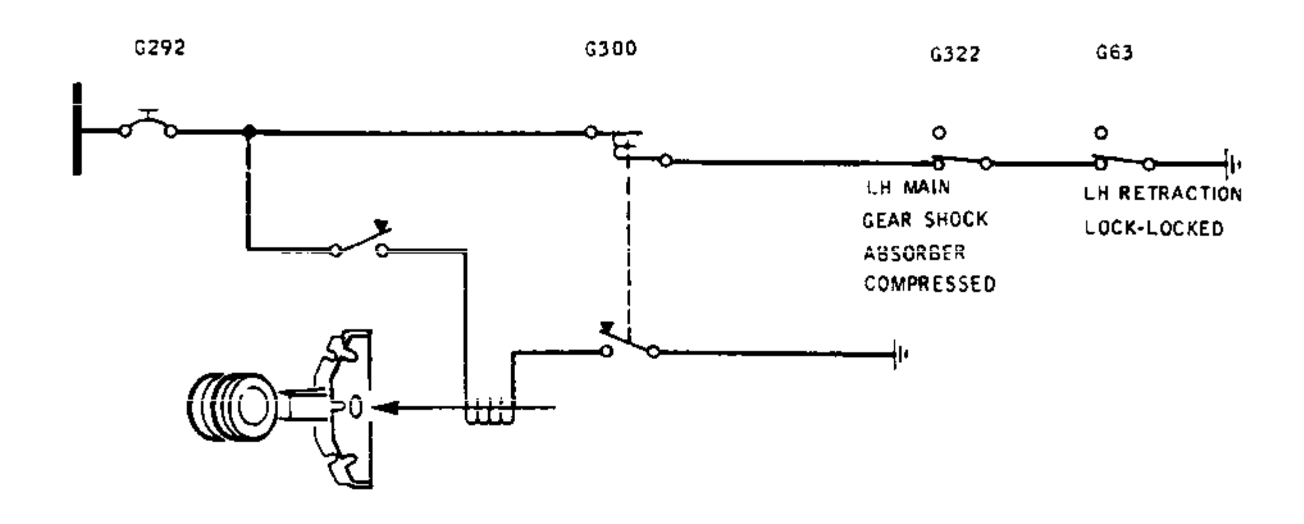
A mechanical safety lock prevents movement of the landing gear Normal control lever (switch G5) to UP position whenever the aircraft is resting on its wheels. When the solenoid is energized this safety lock may be overridden by moving the control lever provided that the following conditions have been fulfilled :

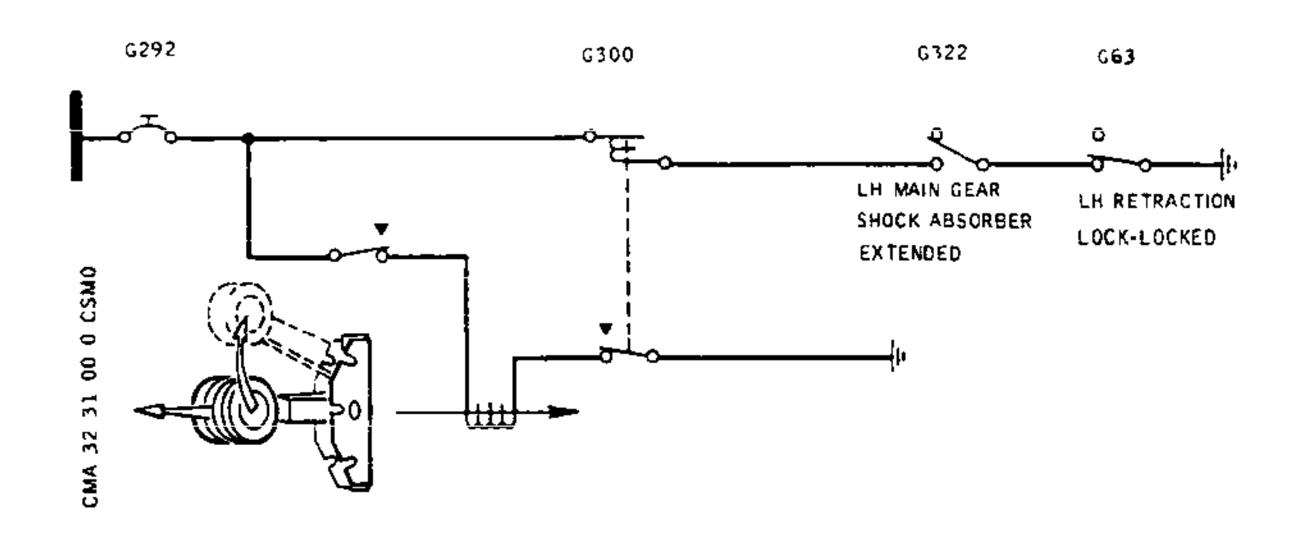
- LH main gear shock absorber (G322) extended,
- LH main gear shortening lock (G63) engaged.

NOTE : In case of absolute necessity, a pushbutton enables the lever to be positioned in UP position by mechanical disengagement of the safety lock system.

(b) With landing gear Normal control lever (switch G5) in UP position, the safety electrovalves (G31) (G32) are energized irrespective of visor position.

(c) Prior to moving the landing gear Normal control lever (switch G5), with main and nose gear as well as the tail gear downlocked, Green LH, NOSE, T and RH arrows on gears position indicating unit (G52) are illuminated.





Safety Lock Solenoid - Normal Control
Figure 010

(d) With landing gear Normal control lever (switch G5) placed in UP position, the gear retraction sequence is as follows :

- Uplock release of main and nose gear doors,
- Opening of main and nose gear doors,
- Downlock release of nose gear drag strut, main gear brace struts, and shortening lock release.
- Simultaneous retraction of nose gear, main gears and tail gear with shortening of main gears,
- Uplocking of gears,
- Closing of main and nose gear doors,
- Uplocking of main and nose gear doors.

(2) Uplock release and opening of doors (Ref. Fig. 001 and 011)

(a) With nose gear shock absorber (G321) and RH main gear shock absorber (G324) extended, safety electrovalves (G31, G32) are energized irrespective of the position of the visor. Green hydraulic system pressure is supplied to door selectors (G29, G30) and nose and main gear selectors (G26, G27) through gear return and depressurization selector valves (4012, 4014).

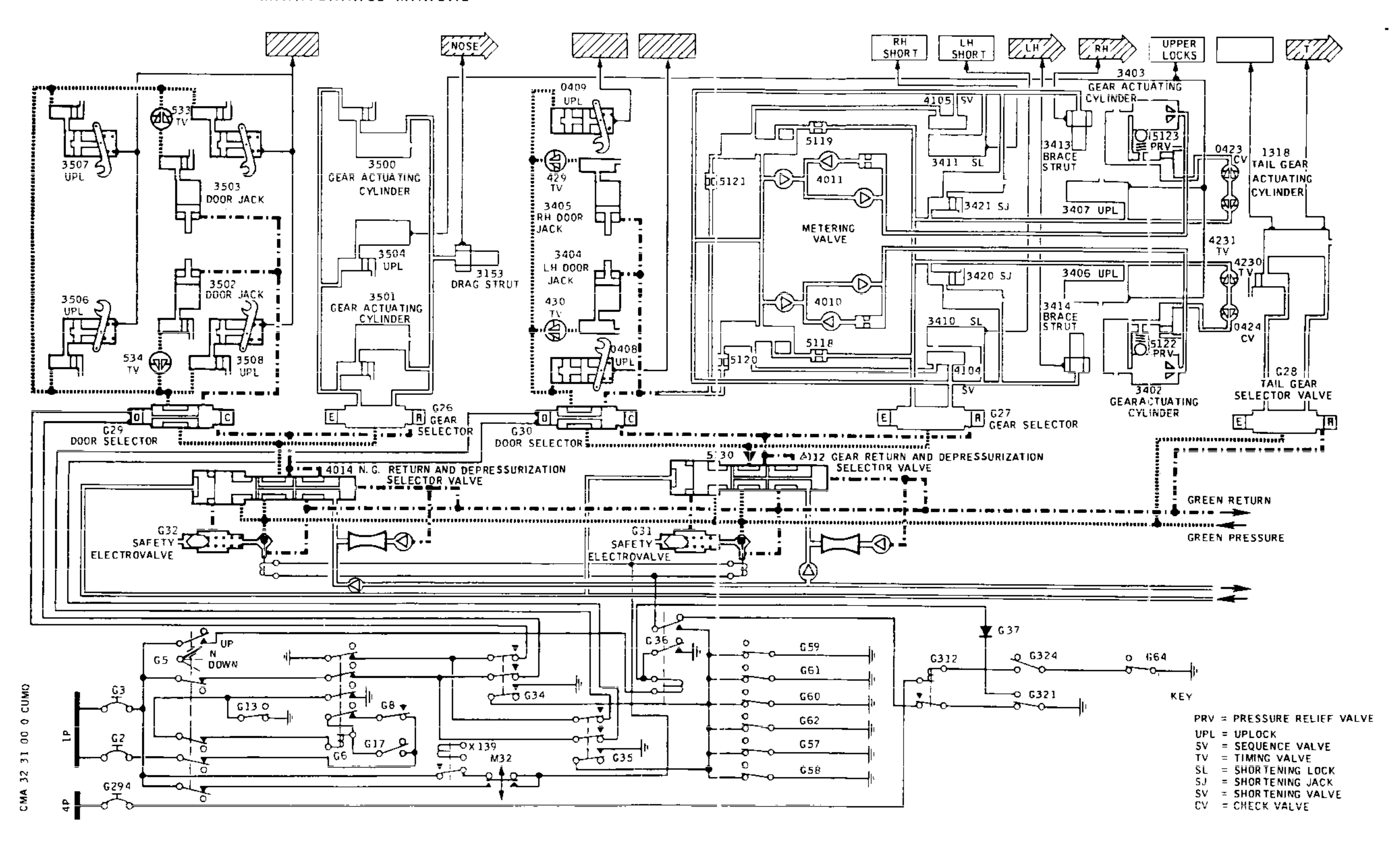
(b) Door selector (G29, G30) solenoids are energized on opening side if nose gear and RH main gear are not uplocked (G17, G13).

(c) The selectors deliver pressure simultaneously to door uplocks (0408, 0409, 3506, 3507, 3508, 3509) and to opening side of door actuating jacks (3404, 3405, 3502, 3503).

(d) Timing valves (429, 430, 533, 534) located downstream of door actuating jack pressure lines (Opening side only) enable door uplock release to be achieved prior to pressurization of door jacks.

(e) On gears position indicating unit (G52) green LH, NOSE, RH arrows and the corresponding red warning lights are illuminated. Green T arrow is also illuminated.

On Flight Engineer's panel, NOSE DOORS and MAIN DOORS LH and RH lights on FAULT ANNUNCIATOR (G81), which illuminate for short period when landing gear Normal control lever is moved to UP position,



Gear Retraction - Door Opening Sequence
Figure 011

are extinguished.

(f) Solenoids of gear door selectors (G29, G30) remain energized and maintain opening side pressure throughout the landing gear retraction sequence.

(3) Downlock release and gear retraction (Ref. Fig.001 and 012)

(a) With nose gear wheels centred and main gear bogie beams aligned, microswitches (G14, G18, G21) are closed. Full closing of doors results in closing of microswitches (G15, G16, 1G20-1, 2G20-1).

Consequently, solenoids of electro-hydraulic gear selectors (G26, G27, G28) are energized on retraction side.

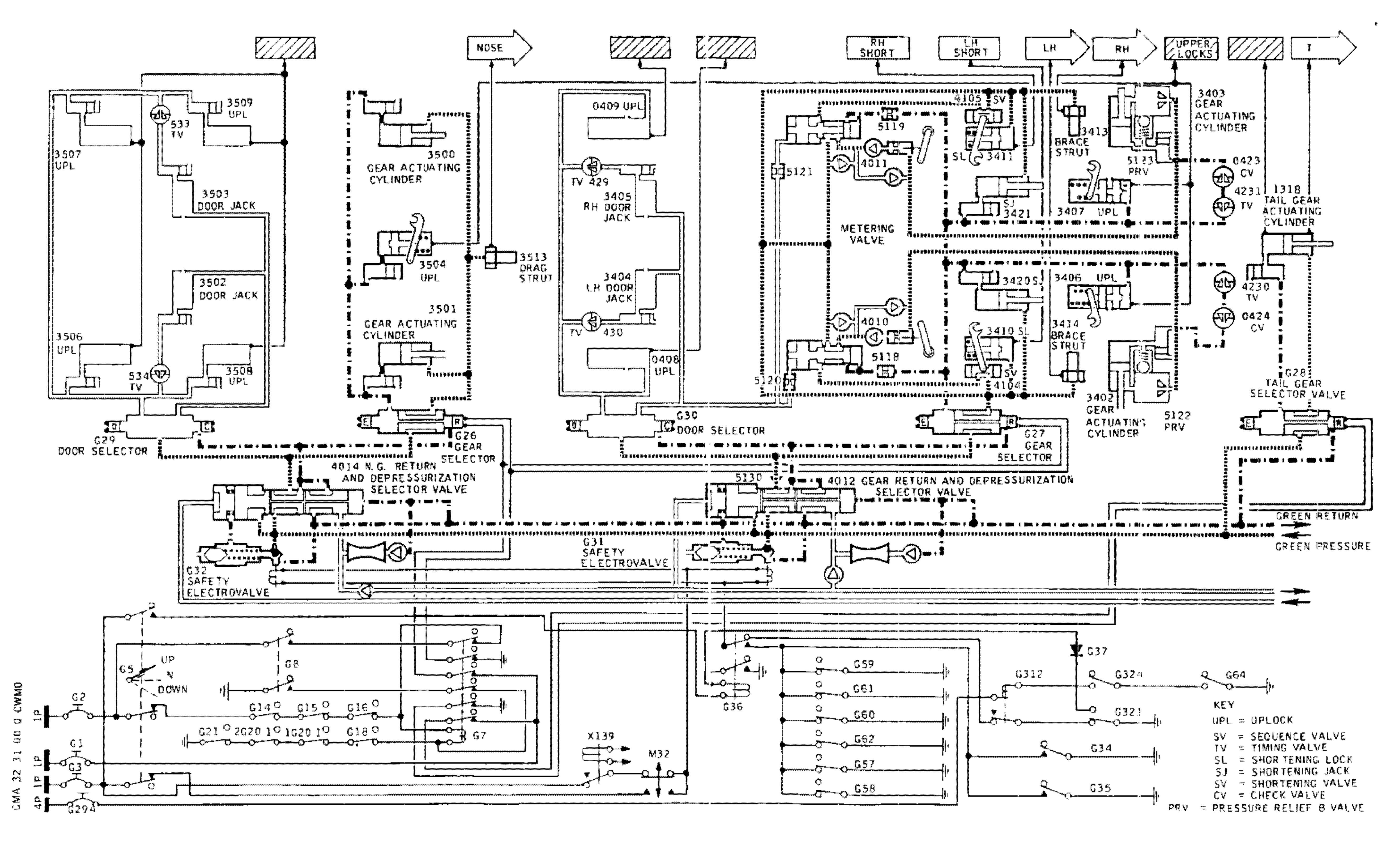
(b) Main gears

(b1) Selector (G27) simultaneously supplies shortening locks (3410, 3411) brace struts (3413, 3414) shortening jacks (3420, 3421) and the metering valves where the pressure remains available for pressurization of gear actuating cylinders (3402, 3403).

(b2) Release of shortening locks (3410, 3411) through sequence valves (4104, 4105) enables pressure to move the piston of metering valves (4010, 4011). As this valve moves from Emergency position to Normal position pressure is applied to retraction side of landing gear actuating cylinder.

(b3) At start of sequence, since the metering valve control plunger is in neutral position, a non-restricted flow of hydraulic fluid is ported to retraction side of gear actuating cylinders (3402, 3403). When moving gears have reached displacement angle of 78° (nominal value) the valve piston control plunger operating-roller which is connected to the gear actuating cylinders by rods and bellcranks bears against the end of the control plunger. The plunger, which is thus gradually depressed, in turn moves the valve piston which gradually ports throttled hydraulic fluid to gear actuating cylinders (3402, 3403).

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Gear Retraction - Gear Downlock Release
Figure 012

Main gear retraction speed is thus reduced at end-of-travel.

(c) Nose gear

Selector (G26) provides hydraulic power for nose gear drag strut downlock release and supplies hydraulic pressure to retraction side of gear actuating cylinders (3500, 3501). The displacement of gear actuating cylinder (3500, 3501) rod is controlled by a restrictor on retraction side. Damping of rod at end-of-travel is achieved through reduction in hydraulic fluid flow-passage cross-sectional area.

(d) Tail gear

Selector (G28) hydraulically powers and provides hydraulic lock release for tail gear actuating cylinder (1318).

NOTE : Tail gear actuating cylinder (1318) mechanically uplocks and downlocks with hydraulic uplock and downlock release for each manoeuvre.

(e) Green LH, NOSE, T and RH arrows on gears position indicating unit (G52) extinguish. Amber UPPER LOCKS light illuminates and red warning light corresponding to Green T arrow illuminates during tail gear retraction then extinguishes.

(4) Gear uplocking

(a) Gear uplocking is automatic and achieved mechanically through uplocks (3406, 3407, 3504). In gear uplocked position the uplock hooks are locked. A spring rod installed in each of the three uplocks (3406, 3407, 3504) dampens gear uplock impact.

Upon completion of retraction and uplock phase of the three gears, the energization circuit of solenoids (G29, G30) on opening side of door selectors is open. Simultaneously the closing side of these solenoids is excited by closing of microswitches (G17, G12, G13). Main and nose gear doors close. Closing side of door selectors (G29, G30) remains energized so long as landing gear Normal control lever (switch G5) is in UP position.

NOTE : Throughout door closing sequence, nose gear, main gear and tail gear selectors (G26, G27, G28) remain energized through relay (G8) being self-held so long as landing gear Normal control lever (switch G5) is in UP position.

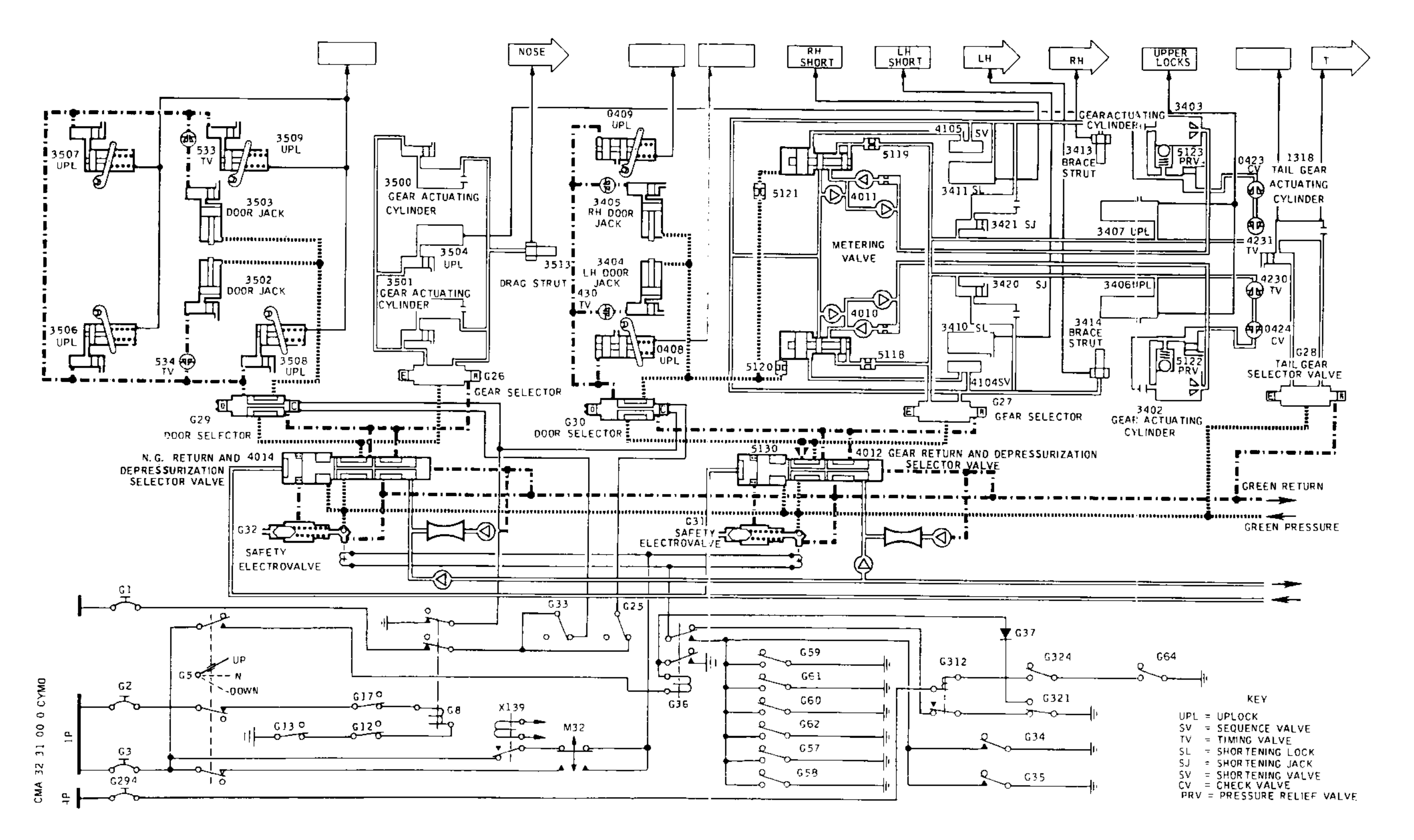
(5) Closing and uplocking of doors
(Ref. Fig.001 and 013)

Closing side of main gear door selector (G30) and nose gear door selector (G29) solenoids is energized if the nose gear (G17) and main gear (G12, G13) are uplocked. The selectors directly supply closing side of door actuating jacks (3404, 3405, 3502, 3503).

At end-of-travel main and nose gear doors are closed and uplocked automatically by uplocks (0408, 0409, 3506, 3507, 3508, 3509).

All lights on indicating unit (G52) are extinguished.

Gear retraction is thus accomplished at the end of this sequence. When landing gear Normal control lever is placed in NEUTRAL position, door selector valves (G29, G30) as well as gear selector valves (G26, G27, G28) are no longer energized and all gear systems are connected to tank return.



Gear Retraction - Door Closing Sequence
Figure 013

B. Extension

(1) General

With visor lowered (not uplocked) and landing gear Normal control lever in DOWN position, the following sequences are accomplished :

- Safety electrovalves energized.
- Uplock release of main and nose gear doors,
- Opening of main and nose gear doors,
- Uplock release of gears and release of tail gears,
- Extension of gears, of tail gear and extension of main gear shock absorbers,
- Downlocking of nose gear (drag strut), of main gear brace strut) of main gear shock absorbers (shortening lock) and tail gear (actuating cylinder),
- Closing of main and nose gear main doors,
- Uplocking of doors.

(2) Uplock release and opening of main gear doors (Ref. Fig.001 and 014)

(a) Lowering of visor, trips microswitch (M32) to non-uplocked position. With nose gear shock absorber (G321) and RH main shock absorber (G324) extended, solenoids of safety electrovalves (G31, G32) are energized and Normal operation of return and depressurization valves (4012, 4014) is no longer prevented. Hydraulic pressure is available at door selectors (G29, G30).

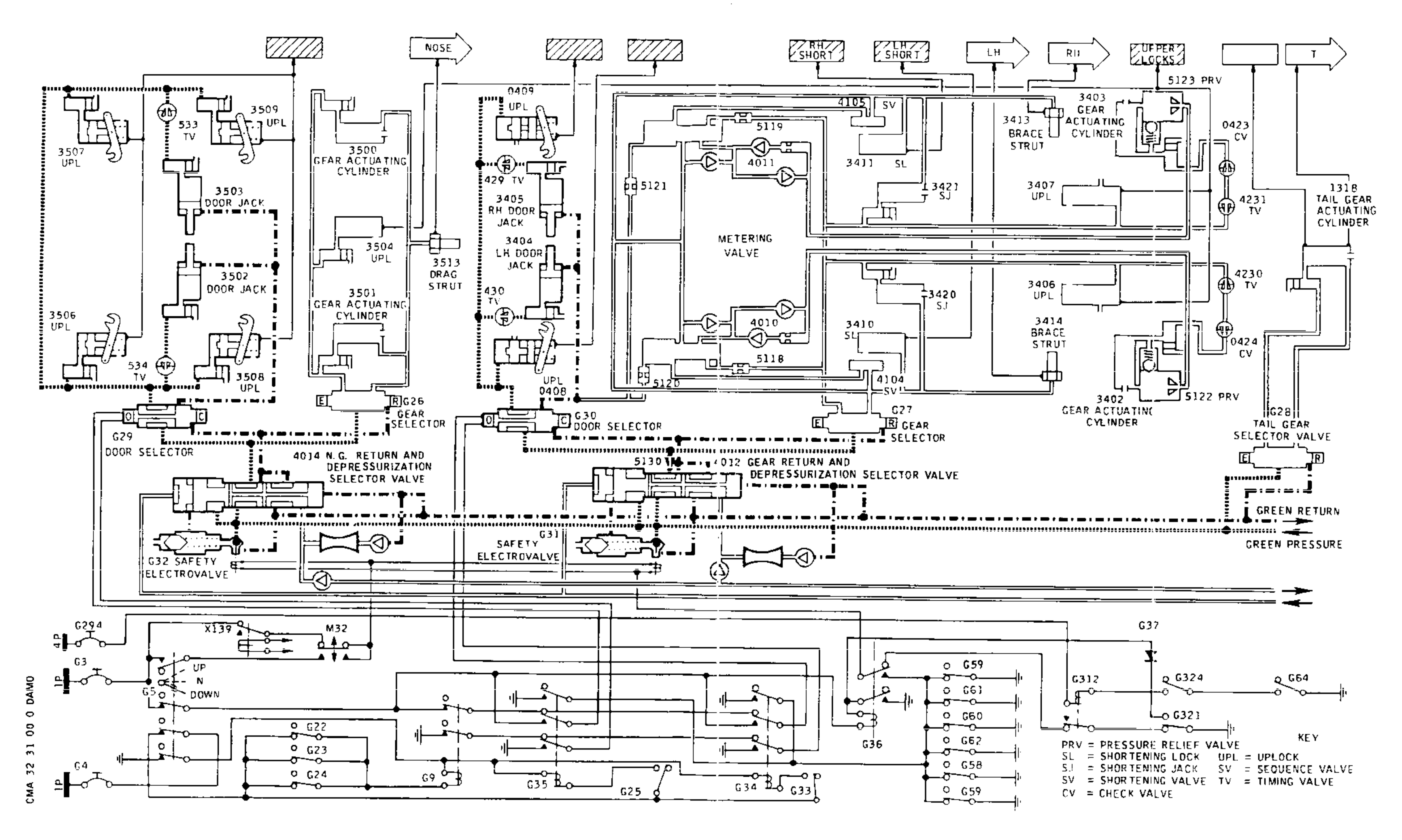
(b) With landing gear Normal control lever in DOWN position LH SHORT, UPPER LOCKS, RH SHORT lights on gears position indicating unit (G52) illuminate.

(c) Door selector (G29, G30) solenoids are energized on opening side if main gears (G23, G24) and nose gear (G22) are not downlocked.

(d) The selectors deliver pressure which simultaneously supplies doors uplocks (0408, 0409, 3506, 3507, 3508, 3509) and door actuating jacks (3404, 3405, 3502, 3503). Timing valves (429, 430, 533, 534) located in the door actuating jack pressure lines (Opening side only) enable door uplocks to be released before jacks are pressurized.

(e) Amber UPPER LOCKS, LH SHORT, RH SHORT, lights on gears position indicating unit (G52) as well as

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Gear Extension - Door Opening Sequence
Figure 014

red warning lights corresponding to Green LH, NOSE, RH arrows are illuminated.

(f) At the end of door opening sequence, the doors operate microswitches (1G20, 2G20, G15, G16) which supply the extension side of nose, main and tail gear selector solenoids.
The gear extension sequence is thus initiated after the door opening sequence.
With door solenoids (G29, G30) energized, pressure is maintained on opening side throughout gear extension sequence.

(3) Uplock release and gear extension
(Ref. Fig. 001 and 015)

(a) Nose gear, main gear and tail gear door selector (G26, G27, G28) solenoids are energized on extension side if nose gear doors (G15, G16) and main gear doors (1G20-1, 2G20-1) are open.

(a1) The selectors simultaneously supply gear uplocks (3406, 3407, 3504) gear actuating cylinders (3402, 3403, 3500, 3501), shortening jacks (3480, 3421) as well as main gear metering valves (4010, 4011). Tail gear selector (G28) releases tail gear actuating cylinder (1318) and supplies extension side with hydraulic power.

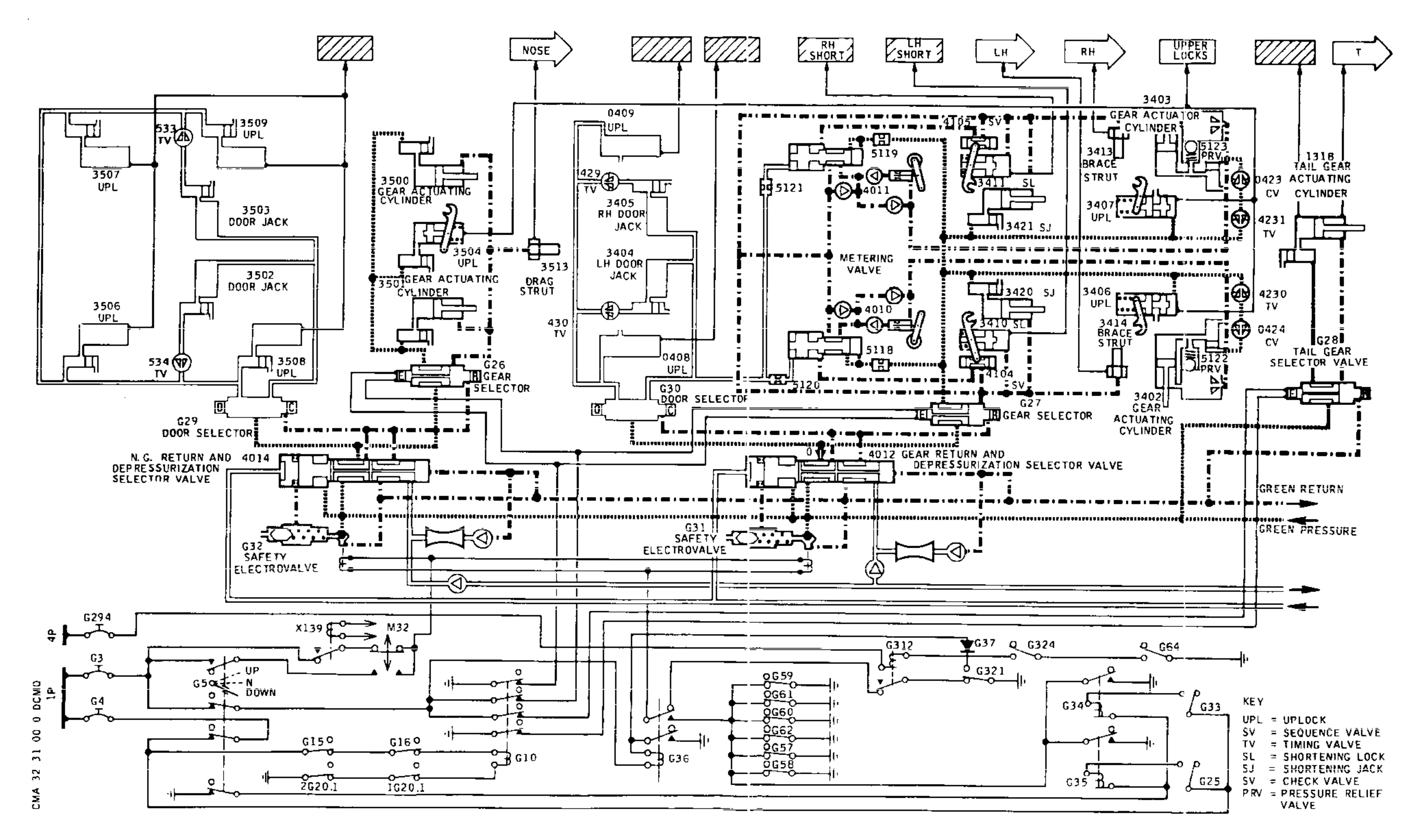
(a2) Timing valves (4230, 4231) located upstream of main gear actuating cylinder pressure lines (extension side only) ensure gear uplock release before pressure is applied to actuating cylinders.

(a3) Two restrictor-check valves (0423, 0424) installed downstream of the timing valves ensure supply of fluid to main gear actuating cylinder extension chamber without cavitation.

(a4) UPPER LOCKS light on gears position indicating unit (G52) is extinguished. The red warning light corresponding to the green T arrow illuminates. The red warning lights corresponding to the green LH, NOSE RH arrows and amber LH SHORT, RH SHORT lights remain illuminated.

(a5) Under pressure, the pistons of metering val-

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Gear Extension - Gear Uplock Release Sequence
Figure 015

ves (4010, 4011) move from Emergency to Normal position. Travel of piston in each valve is dampened through restrictors (5120, 5121).

Progressive depressurization of main gear actuating cylinders is achieved through restrictors (5118, 5119).

During nose gear extension, velocity of each actuating cylinder (3500, 3501) is controlled by restriction of the return fluid flow. By the end-of-travel, further restriction of the return ports provides for dampening of shocks that are likely to effect the aircraft adjoining structure.

(4) Gear downlocking.

(a) With gears extended, mechanical downlock is automatically accomplished on nose gear telescopic drag strut (3513) main gear telescopic brace struts (3413, 3414) shortening locks (3410, 3411) and tail gear actuating cylinder (1318).

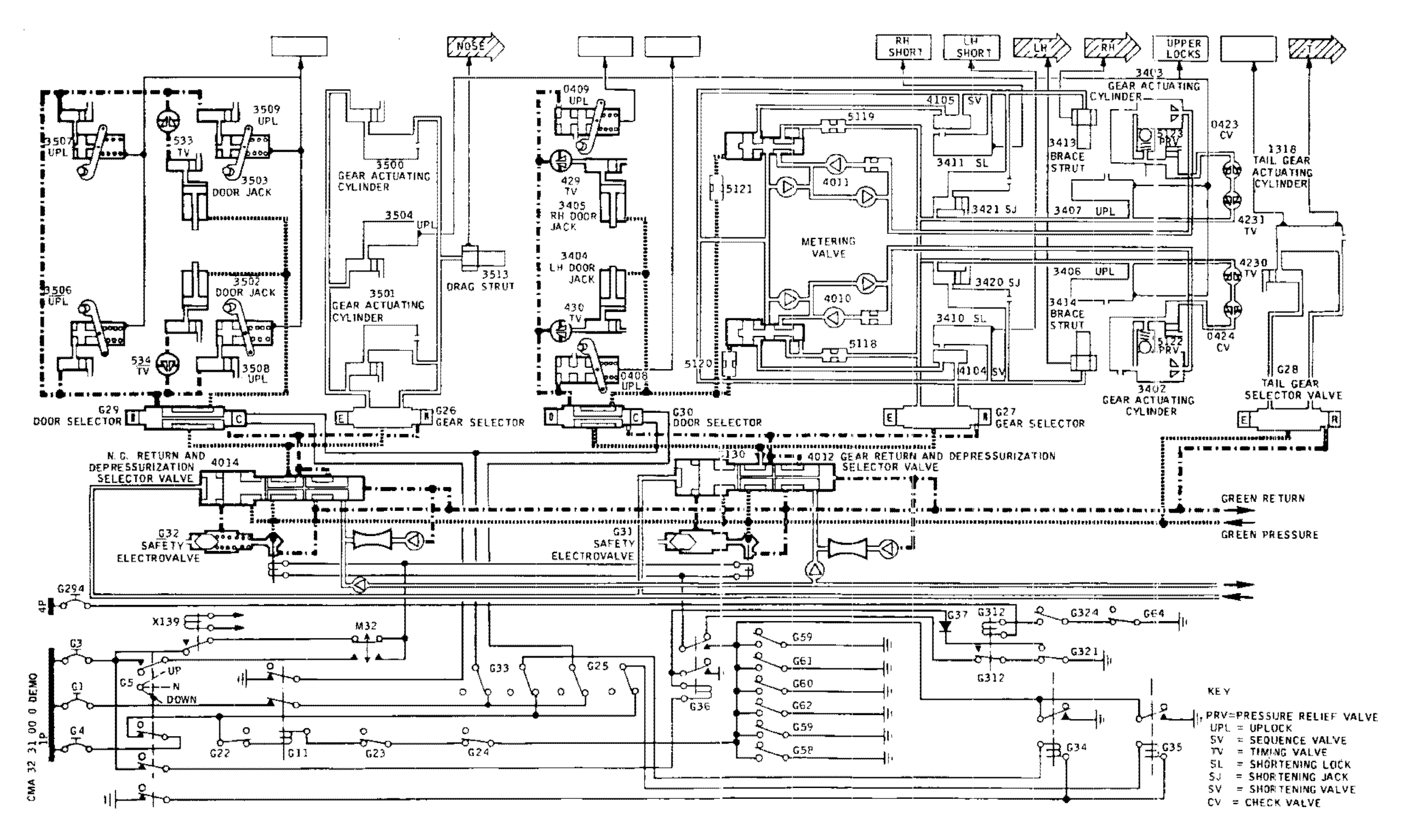
(b) Green NOSE and T arrows on gears position indicating unit (G52) illuminate, red warning light corresponding to Green T arrow extinguishes, Green LH and RH arrows illuminate, amber LH SHORT and RH SHORT lights extinguish.

(c) The extension sequence is thus accomplished upon completion of gear downlocking. The door opening side solenoids are no longer energized, however, the closing side is energized through gear and tail uplock microswitches (G22, G23, G24) and gear door uplocked microswitches (G57 to G62). At start of door closing, as soon as one of microswitches (1G20-1, 2G20-1, G15, G16) is actuated, gear and tail gear selector solenoids are no longer energized and associated lines are connected to tank return.

(5) Closing and uplocking of doors (Ref. Fig.001 and 016)

(a) Solenoids of door selectors (G29, G30) are energized on closing side provided that nose gear (G22) main gear (G23, G24) as well as tail gear (G55) are downlocked and as long as one of the nose or main gear doors (microswitches G57 to G62) is not uplocked.

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Gear Extension - Door Closing Sequence
Figure 016

The selectors directly supply gear door actuating jacks (3404, 3405, 3502, 3503) and main gear metering valves (4010, 4011) in de-activated position and wheel centring pressurization system.

(b) On gears position indicating unit (G52), the red warning lights corresponding to Green LH, NOSE, RH arrows as well as Green LH, NOSE, T, RH arrows are illuminated.

(c) The nose gear main doors and main gear main doors are uplocked by uplocks (0408, 0409, 3506, 3507, 3509). A spring rod provides automatic locking of the uplock hook.

(d) On gears position indicating unit (G52), the red warning lights extinguish while Green LH, NOSE, T and RH arrows remain illuminated.
Upon accomplishment of door uplocking the gear extension sequence is completed.

(e) The First Officer places the landing gear Normal control lever (switch G5) in NEUTRAL position. This manoeuvre results in cut off of power to solenoids of door selectors (G29, G30) thus cutting off hydraulic power to doors and gears.

On gears position indicating unit (G52), green LH, NOSE, T, RH arrows remain illuminated.

10. Opening and Closing of Doors on Ground
(Ref. Fig.001 and 017)

A. General

Ground door opening and closing operations are accomplished using the Green hydraulic system.

With aircraft in following configuration :

- Visor lowered,
- Gears and tail gear downlocked, shock absorbers compressed
- All main doors uplocked,
- Landing gear Normal control lever in DOWN position.

There are two separate handles, one controlling opening of main gear main doors and the other opening of nose gear main doors.

B. Opening and Closing of Nose Gear Main Doors

When control handle located on the landing gear door ground opening control unit (microswitch G33) installed on the nose gear leg is actuated, (indicator plate showing red) door selector (G29) closing side solenoid energization circuit is open.

At the same time nose gear door opening relay (G34) is energized, which results in :

- Energization of safety electrovalve (G31, G32), solenoids.
- Energization of door selector (G29) opening side solenoid.

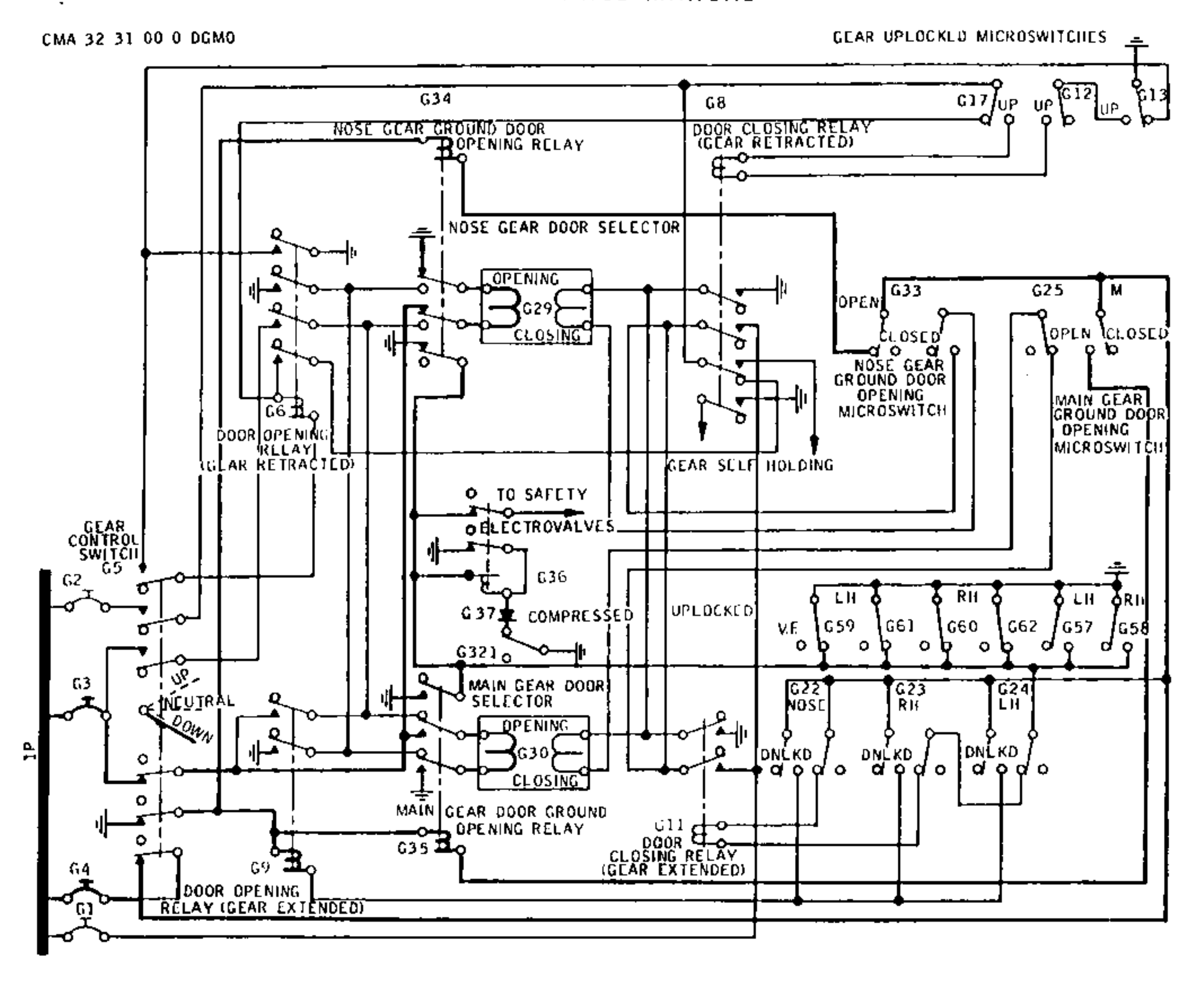
Nose gear main doors open.

At initiation of door opening, microswitches (G59, G60, G61, G62) close thus ensuring in parallel energization of solenoids of safety electrovalves (G31, G32).

When landing gear Normal control lever is placed in NEUTRAL position, door actuating jacks are connected to tank return thereby facilitating specific maintenance tasks.

On gears position indicating unit (G52), the red warning light corresponding to the green NOSE arrow illuminates.

With aircraft in configuration mentioned in foregoing paragraph, door closing is accomplished by returning nose landing gear main door ground opening control handle (microswitch G33) to its initial position (indicator plate showing white). The circuit of nose gear door selector (G29) opening side solenoid is open.



Opening of Doors on Ground
Figure 017

At same time, the circuit of the closing side solenoid is closed and selector (G29) delivers pressure to the nose gear main door actuating jacks (3502, 3503). The doors close.

On gears position indicating unit (G52), the red light corresponding to the green NOSE arrow extinguishes.

C. Opening and Closing of Main Gear Main Doors

When control handle located on the landing gear door ground opening control unit (microswitch G25) installed on the LH main gear leg is actuated, (indicator plate showing red) door selector (G30) closing side solenoid energization circuit is open.

At same time, main gear door opening relay (G35) is energized, which results in :

- Energization of safety electrovalve (G31, G32), solenoids.
- Energization of main gear door selector (G30) opening side selector.

Main gear doors open.

At initiation of door opening, microswitches (G57, G58) close, thus ensuring in parallel energization of solenoids of safety electrovalves (G31, G32).

When landing gear Normal control lever is placed in NEUTRAL position, door actuating jacks are connected to tank return thereby facilitating specific maintenance tasks.

On gears position indicating unit (G52), the red warning lights corresponding to Green LH, RH arrows illuminate.

With aircraft in configuration mentioned in foregoing paragraph, door closing is accomplished by returning main gear main door ground opening control handle to initial position (indicator plate showing white). The circuit of main gear door selector (G30) Opening side solenoid is open.

At same time, the circuit of the closing side solenoid is closed and selector (G30) delivers pressure to the main gear main door actuating jacks.

The doors close.

On gears position indicating unit (G52), the red warning lights corresponding to Green LH, RH arrows extinguish

On indicating unit (G52), lights corresponding to green LH, NOSE, RH arrows extinguish.

11. Electrical Power Supplies

Normal landing control indicating is powered through 28 VDC.

SERVICE	BUSBAR	C/B PANEL
Normal Gear Control	A/MAIN 1P	15-215
Landing Gear Position Indicating	A ESS 3P	1-213
Indicating Flap Lighting Relay Associated with Shock Absorbers and Landing Gears	B ESS 4P	3-213

NORMAL EXTENSION AND RETRACTION - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, SERVICING.

1. General

The following information is intended to enable faults found in the landing gear Normal extension and retraction system to be quickly rectified.
The defect can be isolated with the aid of the trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.
Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101).
The table provides information, including component location, required for rectification.
All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Prepare

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

A. On first Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

B. On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

C. Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
UC DOWN LOCK VISUAL IND	3-213	G 241	C 8
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

D. Energize the aircraft electrical network (Ref 24-41-00, Servicing).

3. Trouble Shooting

A. Landing Gear Retraction Sequence

```
*******************************************************
* It is possible to operate landing gear Normal       *
* control lever from NEUTRAL to UP (in flight).  IF   *
*******************************************************
     ||  |          ---------------------------------------------------
     ||  |         | Not possible to operate landing gear Normal       |
     OK  NOT OK----| control lever from NEUTRAL to UP.                 |
     ||            | Ref. Chart 101.                                   |
     ||             ---------------------------------------------------
******************************************************
* Red warning lights corresponding to green LH, NOSE*
* and RH arrows come on.  IF                         *
******************************************************
     ||  |          ---------------------------------------------------
     ||  |         | Red warning light corresponding to green NOSE     |
     OK  NOT OK----| arrow remains off.                                |
     ||  |         | Ref. Chart 102.                                   |
     ||  |          ---------------------------------------------------
     ||  |          ---------------------------------------------------
     ||  |         | Red warning light corresponding to green LH       |
     ||  |         | or RH arrow remains off.                          |
     ||  |         | Sequence interrupted.  Replace faulty uplock.     |
     ||  NOT OK----| RH door uplock [62], LH door uplock [61].          |
     ||  |         | Sequence continues.  Replace faulty microswitch   |
     ||  |         | LH ; microswitch G57 [40] RH ; microswitch G58    |
     ||  |         | [41].                                             |
     ||  |          ===================================================
     ||  |          ---------------------------------------------------
     ||  |         | Red warning lights corresponding to green LH      |
     ||  NOT OK----| and RH arrows remains off.                        |
     ||  |         | Ref. Chart 104.                                   |
     ||  |          ---------------------------------------------------
     ||  |          ---------------------------------------------------
     ||  |         |  Red warning lights corresponding to green LH,    |
     ||  NOT OK----|  NOSE and RH arrows remain off.                   |
     ||            |  Ref. Chart 105.                                  |
     ||             ---------------------------------------------------
     ||
```

```
******************************************************
* Green LH, NOSE, T and RH arrows go off.            *
* NOTE : Amber UPPER LOCKS indicator light comes on  *
*        during landing gear movement.               *
*        Red warning light corresponding to green T  *
*        arrow comes on during tail gear movement.   *
*        IF                                          *
******************************************************
```

OK

NOT OK---- Green LH, NOSE, T and RH arrows remain on. Ref. Chart 106.

NOT OK---- Green LH, NOSE and RH arrows remain on. Replace landing gear and tail gear raise control relay G7 [10].

NOT OK---- Green LH and RH arrows remain on. Replace main gear selector G27 [30].

NOT OK---- Green NOSE arrow remains on.
Sequence interrupted :
Ref. Chart 109.
Sequence continues : replace microswitch G22 [25].

NOT OK---- Amber UPPER LOCKS indicator light remains off. (Sequence not interrupted). Ref. Chart 110.

NOT OK---- Green LH arrow remains on.
Amber UPPER LOCKS indicator light comes on.
Replace LH gear telescopic brace strut [78].

NOT OK---- | Green RH arrow remains on. Replace RH gear telescopic brace strut [77].

NOT OK---- | Amber UPPER LOCKS indicator light remains on. Ref. Chart 111.

NOT OK---- | Green T arrow remains on. (Sequence not interrupted). Ref. Chart 112.

NOT OK---- | Red warning lights corresponding to green T arrow does not come on. (Sequence not interrupted). Ref. Chart 113.

NOT OK---- | Red warning lights corresponding to green T arrow reamins on. (Sequence not interrupted). Ref. Chart 114.

****
* All indicator lights are off. IF *
****

OK

NOT OK---- | Red warning lights corresponding to green LH, NOSE and RH arrow remain on. Ref. Chart 115.

NOT OK---- | Red warning light corresponding to green NOSE arrow remains on. Ref. Chart 116.

```
 | |  |
 | |  |          -------------------------------------------------
 | |  |         | Red warning lights corresponding to Green LH   |
 | |  NOT OK----| and RH arrows remain on.                        |
 | |  |         | Replace main gear door selector G30 [33].       |
 | |  |          -------------------------------------------------
 | |  |
 | |  |          -------------------------------------------------
 | |  |         | Red warning light corresponding to green LH, or|
 | |  NOT OK----| RH arrow remains on.                            |
 | |            | Ref. Chart 118.                                 |
 | |             -------------------------------------------------
*****************************************************
* End of land gear retraction sequence.             *
* Restore landing gear extension and retraction     *
* system to normal operating condition.             *
*****************************************************
```

B. Landing Gear Extension Sequence

```
*****************************************************
* Amber UPPER LOCKS indicator light comes on.       *
* Amber LH SHORT and RH SHORT indicator lights come *
* on.                                               *
* Red warning lights corresponding to green LH, NOSE *
* and RH arrows come on.  IF                        *
*****************************************************
  ||  |
  ||  |          -------------------------------------------------
  ||  |         | Red warning lights corresponding to green LH,   |
  ||  |         | NOSE and RH arrows remain off.                  |
  OK  NOT OK----| Amber LH SHORT, RH SHORT and UPPER LOCKS        |
  ||  |         | indicator lights remain off.                    |
  ||  |         | Ref. Chart 120.                                 |
  ||  |          -------------------------------------------------
  ||  |
  ||  |          -------------------------------------------------
  ||  |         | Amber LH SHORT or RH SHORT indicator light      |
  ||  NOT OK----| remains off. (Sequence not interrupted).        |
  ||  |         | LH SHORT : replace microswitch G63 [46].        |
  ||  |         | RH SHORT : replace microswitch G64 [47].        |
  ||  |          -------------------------------------------------
  ||  |
  ||  |          -------------------------------------------------
  ||  |         | Amber UPPER LOCKS indicator light remains off.  |
  ||  NOT OK----| (Sequence not interrupted).                     |
  ||  |         | Replace relay G77 [48].                         |
  ||  |          -------------------------------------------------
  ||  |
  ||  |          -------------------------------------------------
  ||  |         | Red warning lights corresponding to green LH,   |
  ||  NOT OK----| NOSE and RH arrows remain off.                  |
  ||  |         | Ref. Chart 121.                                 |
  ||  |          -------------------------------------------------
  ||  |
  ||  |          -------------------------------------------------
  ||  |         | Red warning light corresponding to green LH or  |
  ||  NOT OK----| RH arrow remains off.                           |
  ||  |         | Sequence interrupted : replace faulty uplock.   |
  ||  |         | RH door uplock [62], LH door uplock [61].       |
  ||  |         | Sequence continues : replace faulty microswitch |
  ||  |         | LH, microswitch G57 [40] RH ; microswitch G58   |
  ||  |         | [41].                                           |
  ||  |          -------------------------------------------------
  ||  |
```

NOT OK---- | Red warning lights corresponding to green LH, and RH arrows remain off. Ref. Chart 123.

NOT OK---- | Red warning light corresponding to green NOSE arrow remains off. Ref. Chart 124.

```
****************************************************
* Green LH, NOSE, T and RH arrows come on.         *
* NOTE : Amber UPPER LOCKS indicator light goes off *
*        during landing gear uplock release.        *
*        Amber LH SHORT and RH SHORT indicator      *
*        lights go off when corresponding landing   *
*        gear shortening mechanism downlocks.       *
*        Red warning light corresponding to green T *
*        arrow comes on during tail gear movement.  *
*        IF                                         *
****************************************************
```

OK

NOT OK---- | Amber LH SHORT, UPPER LOCKS and RH SHORT indicator lights remain on. Green LH, NOSE, T and RH arrows are off. Ref. Chart 125.

NOT OK---- | Amber LH SHORT, UPPER LOCKS and RH SHORT indicator lights remain on. Green LH, NOSE and RH arrows are off. Replace landing gear and tail gear lower control relay G10 [13].

NOT OK---- | Amber UPPER LOCKS indicator light remains on. Green NOSE arrow is off. Ref. Chart 127.

NOT OK---- | Amber UPPER LOCKS indicator light remains on. (Sequence not interrupted). Ref. Chart 128.

NOT OK---- Amber LH SHORT, UPPER LOCKS and RH SHORT indicator lights remain on.
Green LH and RH arrows are off.
Replace main gear selector G27 [30].

NOT OK---- Amber LH SHORT and UPPER LOCKS indicator lights remain on.
Green LH arrow is off.
Replace LH main gear uplock [67].

NOT OK---- Amber UPPER LOCKS and RH SHORT indicator lights remain on.
Green RH arrow is off.
Replace RH main gear uplock [68].

NOT OK---- Red warning lights corresponding to green T arrow remains off. (Sequence not interrupted).
Ref. Chart 129.

NOT OK---- Green NOSE arrow remains off.
Visual indicator G245 indicates nose gear telescopic drag strut not locked.
Replace nose gear telescopic drag strut [79].

NOT OK---- Green LH arrow remains off.
Visual indicator G246 indicates LH main gear telescopic brace strut not locked.
Replace LH telescopic brace strut [78].

NOT OK---- Green RH arrow remains off.
Visual indicator G247 indicates RH main gear telescopic brace strut not locked.
Replace RH telescopic brace strut [77].

```
     NOT OK----| Green T arrow remains off.
               | (Sequence not interrupted).
               | Ref. Chart 131.

               | Green LH, RH or NOSE arrow remains off.
               | (Sequence not interrupted).
     NOT OK----| LH : replace microswitch G54 [37].
               | RH : replace microswitch G53 [36].
               | NOSE : replace microswitch G22 [25].

               | Green LH, RH, NOSE and T arrows and the
     NOT OK----| corresponding red warning lights remain off.
               | Replace circuit breaker G51 [5].

               | Amber LH SHORT or RH SHORT indicator light
     NOT OK----| remains on.
               | Ref. Chart 132.
*****************************************************
* Red warning lights corresponding to green LH, NOSE*
* and RH arrows go off. IF                          *
*****************************************************
               | Red warning lights corresponding to green LH,
 OK  NOT OK----| NOSE and RH arrows remain on.
               | Ref. Chart 133.

               | Red warning light corresponding to green NOSE
     NOT OK----| arrow remains on.
               | Ref. Chart 116.

               | Red warning lights corresponding to green LH
     NOT OK----| and RH arrows remain on.
               | Replace main gear door selector G30 [33].
```

```
   ||  |
   ||  |    -------------------------------------------------
   ||  |   | Red warning light corresponding to green LH or|
   ||  NOT OK----| RH arrow remains on.                            |
   ||      | Ref. Chart 118.                                 |
   ||       -------------------------------------------------
*****************************************************
* End of landing gear extension sequence.           *
* Restore landing gear extension and retraction     *
* system to normal operating condition.             *
*****************************************************
```

C. Door Ground Opening

```
*********************************
* Door ground opening failure   *
* Ref. Chart 140.               *
*********************************
               |
               |
*********************************
* Restore door ground opening   *
* system to normal operating    *
* condition.                    *
*********************************
```

NOT POSSIBLE TO OPERATE LANDING GEAR NORMAL CONTROL LEVER FROM NEUTRAL TO UP.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

WARNING : THIS TROUBLE SHOOTING SHALL BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

Prepare system as detailed in paragraph 2.
Open door 123AB and check voltage between test connector UT1837-3 terminal A and ground.

- 0V → Replace circuit breaker G292 [6]
- 28V → On panel 1-213, map ref. M17, trip circuit breaker G292 [6], disconnect microswitch G322 [54] and reset circuit breaker G292. Possible to operate control lever from NEUTRAL to UP.
  - YES → Check LH main gear shock aborber nitrogen pressure (Ref. 32-11-27, Inspection/Check).
    - OK → Replace micro-switch G322 [54]
    - NOT OK → Replace shock absorber [58]
  - NO → On relay box 2-123, continuity between relay G300 [51] terminals D2 and D3.
    - YES → Replace switch G5 [8]
    - NO → Replace relay G300 [51].

All branches then → Trip circuit breaker G292 [6], connect microswitch G322 [54] and reset circuit breaker G292 [6].
Close door 123AB.

Chart 101

RED WARNING LIGHT CORRESPONDING TO GREEN NOSE ARROW REMAINS OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

Open gear doors using Emergency system (Ref, 32-32-00, Adjustment/Test).
On panel 15-215, map ref. A8, trip, safety and tag circuit breaker G3 [3].
Continuity between nose gear and door safety electrovalve G32 [35] terminals A and C.

YES	NO
Replace nose gear door selector G29 [32]. Remove safety clip and tag and reset circuit breaker G3 [3].	Replace nose gear and door safety electrovalve G32 [35]. Remove safety clip and tag and reset circuit breaker G3 [3].

Chart 102

RED WARNING LIGHTS CORRESPONDING TO GREEN LH AND RH ARROWS REMAIN OFF

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

On panel 15-215, map ref. A8, trip, safety and tag circuit breaker G3 [3].
Open door 151DB.
Continuity between main gear and door safety electrovalve G31 [34] terminals A and C.

YES:

Replace main gear door selector G30 [33].
Remove safety clip and tag and reset circuit breaker G3 [3].

NO:

Replace main gear and door safety electrovalve G31 [34].
Remove safety clip and tag and reset circuit breaker G3 [3].

Chart 104

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

RED WARNING LIGHTS CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN OFF.

- Prepare system as detailed in paragraph 2.
- Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).
- Carry out a landing gear door ground opening test (Ref. 32-00-00, Servicing).
- The doors open.

YES → (continue below)

NO → Sheet 2

- Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).
- Place landing gear Normal control lever in UP position.
- In hydraulics bay, check voltage between main gear door selector [33] plug G30A terminals A and C.

0V → (continue below)

28V → Sheet 3

- Open door 123AB.
- On relay box 2-123 check voltage between test connector UT1837-5 terminals A and B.

28V → (continue below)

0V → Sheet 4

- On main gear door selector [33] plug G30A, check voltage between terminal A and ground.

28V → Replace relay G6 [9]

0V → Replace switch G5 [8].

Chart 105 (Sheet 1 of 4)

```
                                                                    NO
                                                                     |
*********************************************************************
* Place landing gear Normal control lever in DOWN position.        *
* Check voltage between test connector UT1837 terminal 12A and     *
* ground. (Door 123AB, relay box 2-123).                           *
*********************************************************************
    |                                           |
    0V                                         28V
    |                                           |
*************************************  ******************************
* In hydraulics bay, check voltage  *  * Continuity between visor  *
* between main gear and door safety *  * uplock microswitch M32 [56]*
* electrovalve [34] plug G31A       *  * terminals B and E. (Door  *
* terminal A and ground.            *  * 113BB).                   *
*************************************  ******************************
        |                   |              |              |
        0V                 28V            YES             NO
        |                   |              |              |
-----------------   ----------------   ---------------   -------------
| Replace circuit|  | Replace switch|  | Replace relay|  | Replace     |
| breaker G3 [3].|  | G5 [8].       |  | X139 [57].   |  | microswitch |
|                |  |               |  |              |  | M32 [56].   |
-----------------   ----------------   ---------------   -------------
```

Chart 105 (Sheet 2 of 4)

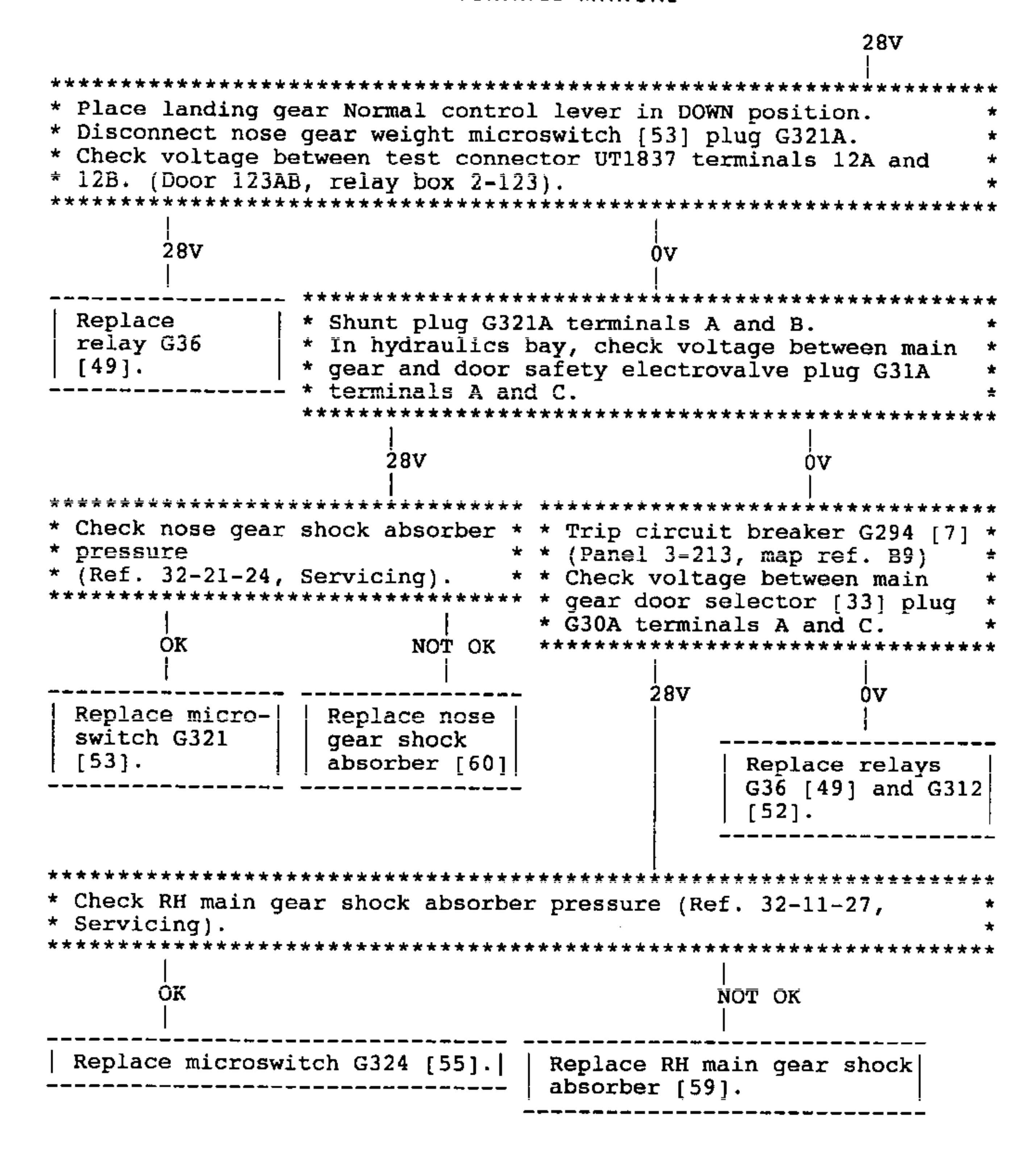


Chart 105 (Sheet 3 of 4)

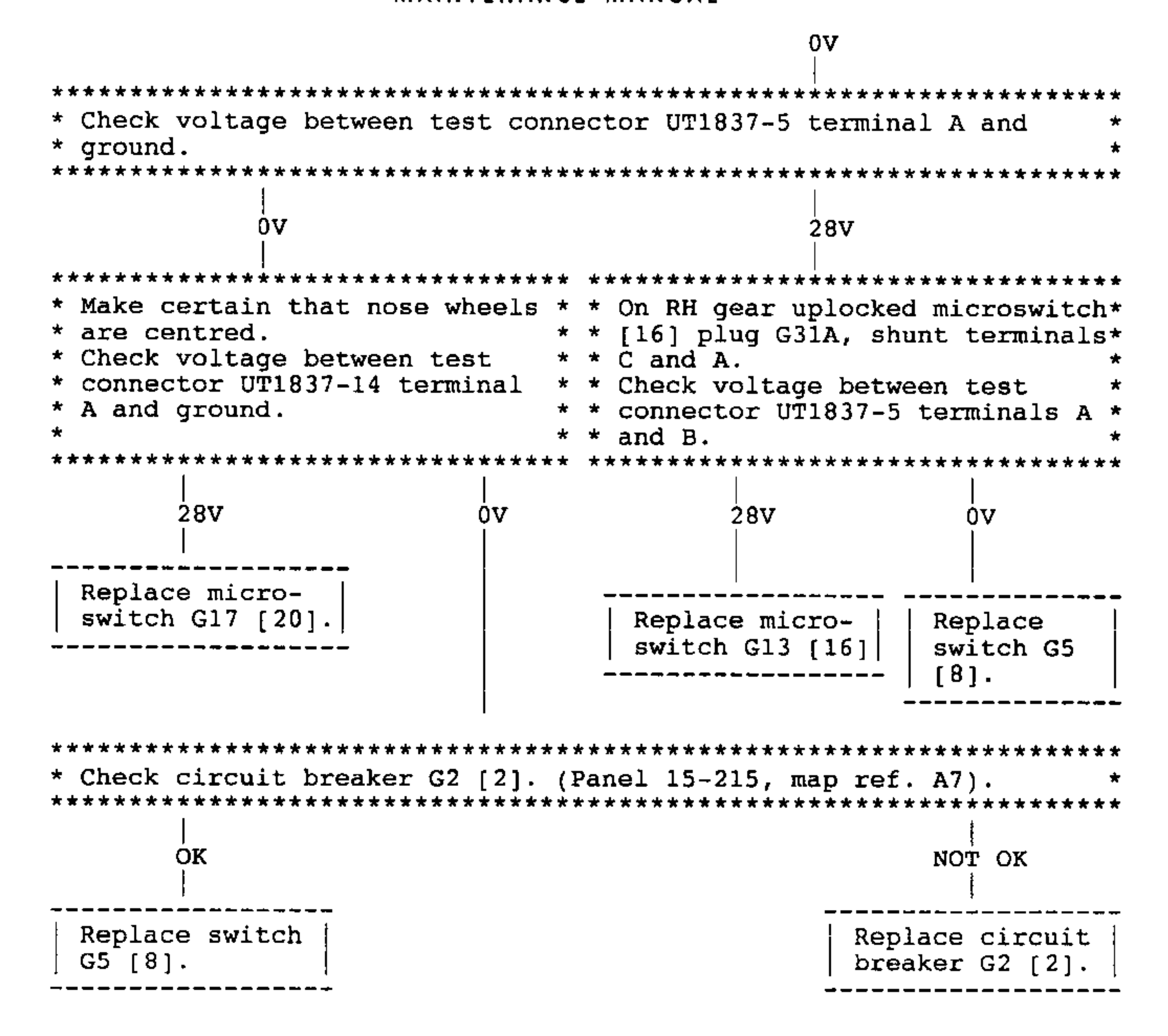


Chart 105 (Sheet 4 of 4)

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

* GREEN LH, NOSE T AND RH ARROWS REMAIN ON.

* Prepare system as detailed in paragraph 2.
* Open gear doors (Ref. 32-00-00, Servicing).
* Nose gear door uplock release is correct.

NO → Replace faulty nose gear uplock [69].

YES ↓

* Nose and main gear doors open correctly

NO → Replace faulty door actuating jack.
Nose gear : LH, [72], RH, [73].
Main gear : LH, [70], RH, [71].

YES ↓

* Close gear doors (Ref. 32-00-00, Servicing).
* The doors close.

NO → Replace circuit breaker G1 [1].
(Panel 15-215, map ref. A6).

YES ↓

* On test connector UT1837, continuity between terminals 14A and 14B (relay G7 coil)

NO → Replace landing gear and tail gear raise control relay G7 [10].

YES ↓

Chart 106 (Sheet 1 of 4)

```
       YES
        |
***********************************************************************
* Align nose wheels.                                                  *
* Open gear doors (Ref. 32-00-00, Servicing).                         *
* Shut down and depressurize Green hydraulic system                   *
* (Ref. 29-11-00, Servicing).                                         *
* Place landing gear Normal control lever in UP position.             *
* Check voltage between test connector UT1837 terminal 14A and        *
* ground.                                                             *
***********************************************************************
        |                                                          |
        28V                                                        0V
        |                                                     Sheet 3
******************************************************************
* Shunt LH gear bogie beam aligned microswitch G18 [21] plug*
* G18A terminals D and F.                                        *
* Check voltage between RH gear bogie beam aligned micro-        *
* switch G21 [24] plug G21A terminal D and ground.               *
******************************************************************
        |                                                     |
        28V                                                   0V
        |                                                Sheet 4
*******************************************
* Check pressure of all four pitch dampers *
* (Ref. 32-11-31, Servicing).              *
*******************************************
        |            |      ----------------------------------
        OK           NOT OK-| Replace faulty pitch damper [80].|
        |                   ----------------------------------
*******************************************
* Remove LH gear bogie beam aligned micro- *
* switch G18 [21].                         *
* Continuity between terminals D and F in  *
* released position.                       *
*******************************************
        |              |      ------------------------------------
        YES            NO---| Replace LH gear bogie beam aligned|
        |                   | microswitch G18 [21].             |
        |                   ------------------------------------
        |
        |                   ------------------------------------
        |-------------------| Replace RH gear bogie beam aligned|
                            | microswitch G21 [24].             |
                            ------------------------------------
```

Chart 106 (Sheet 2 of 4)

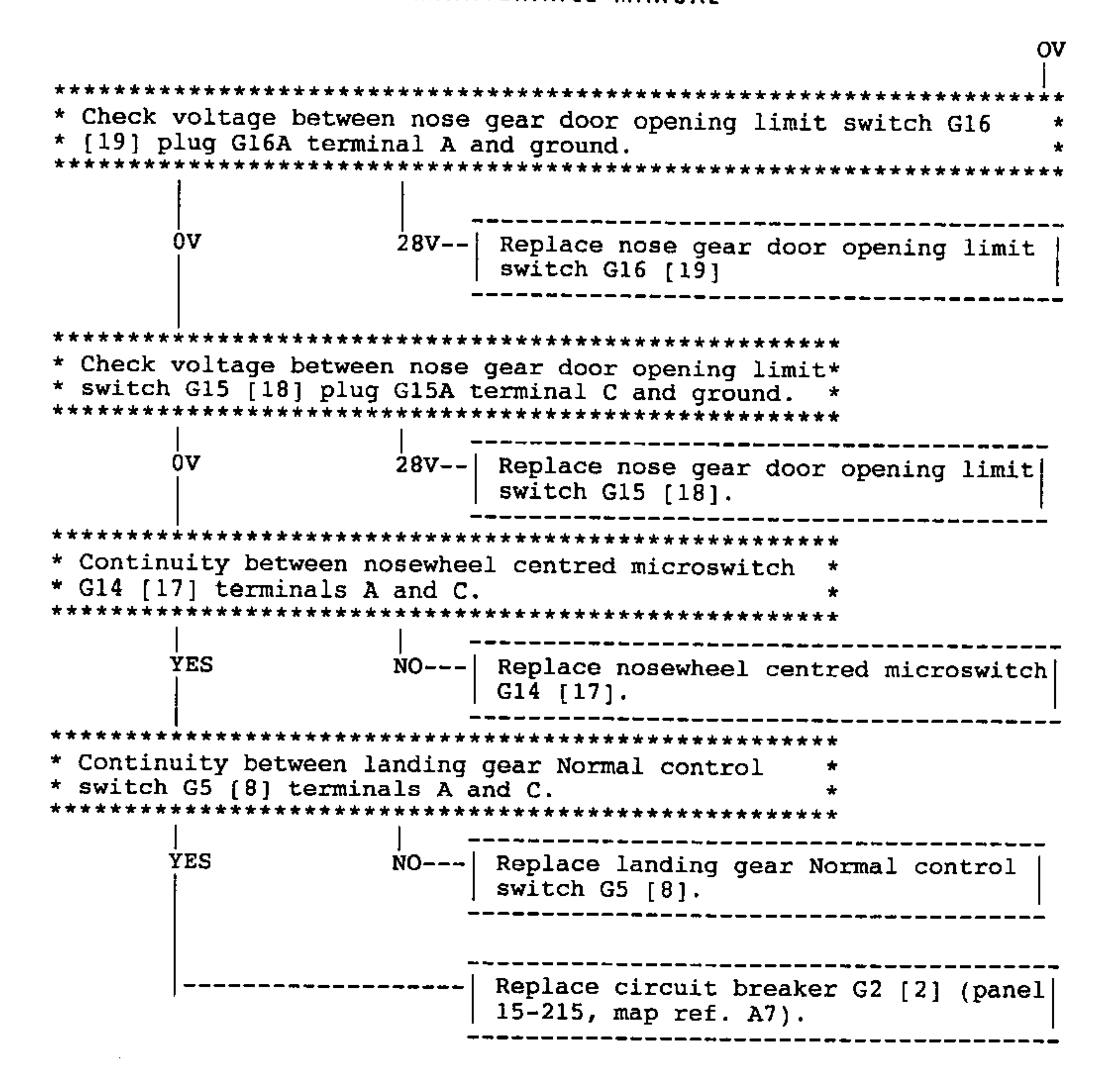


Chart 106 (Sheet 3 of 4)

```
                                                                   OV
                                                                   |
*******************************************************************
* Check voltage between RH gear door opening limit switch 2G20    *
* [23] plug 2G20A terminal F and ground.                          *
*******************************************************************
        |              |
        |              |     --------------------------------------
        28V            OV---| Replace LH gear door opening limit  |
        |                   | switch 1G20 [22].                   |
        |                    --------------------------------------
        |
        |                    --------------------------------------
        |-------------------| Replace RH gear door opening limit  |
                            | switch 2G20 [23].                   |
                             --------------------------------------
```

Chart 106 (Sheet 4 of 4)

```
**************************************-------------------------------
* GREEN NOSE ARROW REMAINS ON.       *| GROUND EQUIPMENT REQUIRED    |
* SEQUENCE INTERRUPTED.              *|------------------------------
**************************************| DESCRIPTION          PART NO|
                                      |------------------------------
                                      | MULTIMETER                -  |
                                      | GROUND POWER UNIT EMH 398E   |
                                      -------------------------------

*************************************************
* Continuity between nose gear selector G26 [29]*
* terminals A and C.                            *
*************************************************
        |              |    ---------------------------------------
       YES            NO---| Replace nose gear selector G26 [29]. |
        |                   ---------------------------------------
*************************************************
* Jack up the aircraft (Ref. 07-11-00).         *
* Using ground power unit EMH 398E, check that  *
* telescopic drag strut locks correctly.        *
*************************************************
        |         |
        |         |         ---------------------------------------
       OK        NOT OK----| Replace nose gear telescopic drag     |
        |                  | strut [79].                           |
        |                   ---------------------------------------
        |
        |                   ---------------------------------------
        |------------------| Replace nose gear door selector G26   |
                           | [29].                                 |
                            ---------------------------------------
```

Chart 109

AMBER UPPER LOCKS INDICATOR LIGHT REMAIN OFF (SEQUENCE NOT INTERRUPTED).

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

* Prepare system as detailed in paragraph 2.
* Check voltage between test connector UT1838 terminal 15B and ground. (Door 123AB, relay box 3-123).

- 0V → Replace switch G5 [8].
- 28V →
  * Shunt RH gear downlocked microswitch G53 [36] plug G53A terminals E and F.
  * Amber UPPER LOCKS indicator light is on.
    - YES → Replace micro-switch G53 [36].
    - NO → Replace relay G77 [48].

Chart 110

AMBER UPPER LOCKS INDICATOR LIGHT REMAINS ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

* Open gear doors (Ref. 32-00-00, Servicing).
* Prepare system as detailed in paragraph 2.
* Manually lock nose and main gear uplocks.
* Shunt RH gear downlocked microswitch G53 [36] plug G53A terminals E and F.
* NOTE 1 : At end of trouble shooting, open doors using Emergency system (Ref. 32-00-00, Adjustment/Test).(Uplocks unlock) Close doors using Green hydraulic system ; landing gear Normal control lever in DOWN position.
* Amber UPPER LOCKS indicator light is on.

- NO: Sheet 2
- YES: Continuity between nose gear uplocked microswitch G17 [20] terminals D and F.
  - YES: Replace micro-switch G17 [20]. (Ref. NOTE 1).
  - NO: Continuity between LH gear uplocked micro-switch G12 [15] terminals D and F.
    - YES: Replace microswitch G12 [15]. (Ref. NOTE 1).
    - NO: Replace microswitch G13 [16]. (Ref. NOTE 1).

Chart 111 (Sheet 1 of 2)

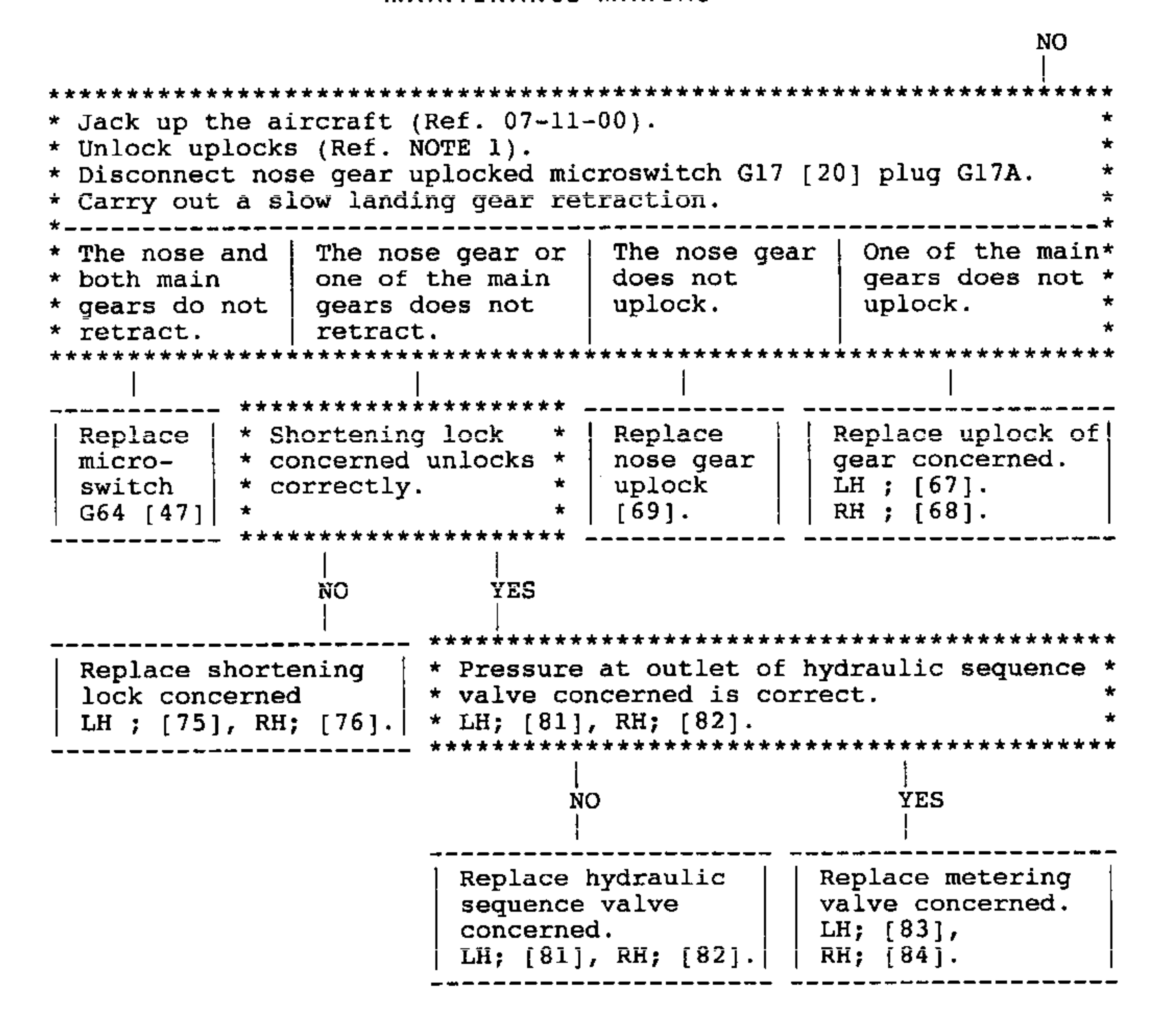


Chart 111 (Sheet 2 of 2)

```
*************************************
* GREEN T ARROW REMAINS ON.         *
* SEQUENCE NOT INTERRUPTED.         *
*************************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

```
********************************************************************
* Disconnect tail gear selector plug G28A.                         *
* Continuity between tail gear selector G28 [31] receptacle        *
* terminals A and C.                                               *
********************************************************************
       |                                        |
       NO                                       YES
       |                                        |
---------------------------------------         |
| Replace tail gear selector G28 [31].|         |
---------------------------------------         |

********************************************************************
* Prepare system as detailed in paragraph 2.                       *
* Open gear doors (Ref. 32-00-00, Servicing).                      *
* Shut down and depressurize Green hydraulic system (Ref. 29-11-00,*
* Servicing).                                                      *
* Ground test connector UT1837 terminal 14B (Door 123AB, relay box *
* 2-123).                                                          *
* Make certain that nosewheels are centred.                        *
* Place landing gear Normal control lever in UP position.          *
* Check voltage between tail gear selector [31] plug G28A terminals*
* A and C.                                                         *
********************************************************************
       |                                            |
       0V                                           28V
       |                                            |
------------------------------      --------------------------------
| Replace relay G7 [10].     |      | Replace microswitch G55 [38]. |
| Connect tail gear selector |      | Connect tail gear selector    |
| Plug G28A.                 |      | Plug G28A.                    |
------------------------------      --------------------------------
```

* RED WARNING LIGHT CORRESPONDING TO GREEN T ARROW DOES NOT COME ON. SEQUENCE NOT INTERRUPTED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

* Continuity between tail gear uplocked microswitch G56 [39] terminals A and B.

YES: Replace micro-switch G55 [38].

NO: Replace micro switch G56 [39].

Chart 113

RED WARNING LIGHT CORRESPONDING TO GREEN T ARROW REMAINS ON. SEQUENCE NOT INTERRUPTED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

Remove tail gear uplocked microswitch G56 [39].
Continuity between microswitch G56 terminals A and B.

YES: Replace tail gear uplocked micro-switch G56 [39].

NO: Replace tail gear actuating cylinder [74].

Chart 114

```
**************************************---------------------------------
* RED WARNING LIGHTS CORRESPONDING TO*| GROUND EQUIPMENT REQUIRED     |
* GREEN LH, NOSE AND RH ARROWS REMAIN*|-------------------------------|
* ON.                                *| DESCRIPTION           PART NO |
**************************************|-------------------------------|
                                      | MULTIMETER               -    |
                                      ---------------------------------

**********************************************************************
* Prepare system as detailed in paragraph 2.                         *
* Manually lock nose and main gear uplocks.                          *
* Make certain that hydraulic system is depressurized.               *
* Place landing gear Normal control lever in UP position.            *
* Check voltage between test connector UT1837 terminals 8C and 8D    *
* (door 123AB, relay box 2-123).                                     *
**********************************************************************
       |                                                       |
       0V                                                     28V
       |                                                       |
*****************************************************    ----------------
* Check voltage between test connector UT1837       *    | Replace relay |
* terminal 8C and ground.                           *    | G8 [11].      |
*****************************************************    ----------------
       |                             |                         |
       0V                           28V                        |
       |                             |                         |
------------------  ******************************             |
| Replace micro- |  * Continuity between microswitch*          |
| switch G17 [20].| * G12 [15] terminals A and B    *          |
------------------  *********************************          |
       |                  |               |                    |
       |                  NO              YES                  |
       |                  |               |                    |
       |      ------------------  ------------------           |
       |      | Replace micro- |  | Replace micro- |           |
       |      | switch G12 [15].| | switch G13 [16].|          |
       |      ------------------  ------------------           |
       |            |             |              |             |
----------------------------------------------------------------------
| Open doors using Emergency system (Ref. 32-32-00, Adjustment/      |
| Test). (Gear uplocks unlock).                                      |
| Close gear doors using Green hydraulic system ; landing gear       |
| Normal control lever in DOWN position.                             |
----------------------------------------------------------------------
```

Chart 115

RED WARNING LIGHT CORRESPONDING TO GREEN NOSE ARROW REMAINS ON.

Close gear doors (Ref. 32-00-00, Servicing).

Both nose gear doors close correctly.	Nose gear LH door does not close correctly	Nose gear RH door does not close correctly	Neither nose gear door closes correctly
(go to next step)	Adjust LH door jack [72] or replace if necessary.	Adjust RH door jack [73] or replace if necessary.	Replace nose gear door selector G29 [32].

- Open gear doors (Ref. 32-00-00, Servicing).
- Disconnect nose gear LH door uplocked microswitch G59 [42] and G61 [44] plugs.
- Close gear doors (Ref. 32-00-00, Servicing).
- Red warning light corresponding to green NOSE arrow is on.

YES:

- Open gear doors (Ref. 32-00-00, Servicing).
- Disconnect microswitch G60 [43]
- Close doors (Ref. 32-00-00, Servicing).
- Red warning light corresponding to green NOSE arrow is on.
  - NO: Replace microswitch G62 [45]
  - YES: Replace microswitch G60 [43]

NO:

- Open gear doors (Ref. 32-00-00 Servicing).
- Connect microswitch G61 [44]
- Close doors (Ref. 32-00-00, Servicing).
- Red warning light corresponding to green NOSE arrow is on.
  - YES: Replace microswitch G61 [44].
  - NO: Replace microswitch G59 [42].

Chart 116

```
****************************************
* RED WARNING LIGHT CORRESPONDING TO *
* GREEN LH OR RH ARROW REMAINS ON.   *
****************************************

*******************************************************************
* Prepare system as detailed in paragraph 2.                       *
* Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).    *
* Carry out a door ground opening and closing test (Ref. 32-00-00, *
* Servicing).                                                      *
* The main gear door concerned remains open.                       *
*******************************************************************
        |                                       |
        NO                                      YES
        |                                       |
*********************************  ---------------------------------
* The door concerned is uplocked.* |Replace jack of door concerned |
*********************************  |RH ; [71], LH ; [70].          |
        |               |          ---------------------------------
        |               |
        |               |          ---------------------------------
        |              YES---------| Replace faulty door uplock    |
        |                          | RH ; [62], LH ; [61].         |
        |                          ---------------------------------
        |
        |                          ---------------------------------
        NO-------------------------| Replace microswitch concerned |
                                   | RH ; G58 [41], LH ; G57 [40]. |
                                   ---------------------------------
```

Chart 118

RED WARNING LIGHTS CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN OFF. AMBER LH SHORT, RH SHORT AND UPPER LOCKS INDICATOR LIGHTS REMAIN OFF.	GROUND EQUIPMENT REQUIRED	
	DESCRIPTION	PART NO
	MULTIMETER	

Place landing gear Normal control lever in NEUTRAL position. Check voltage between test connector UT1838-15 terminal A and ground (door 123AB, relay box 3-123).

0V	28V
Replace circuit breaker G4 [4].	Replace landing gear Normal control switch G5 [8].

Chart 120

```
**************************************
* RED WARNING LIGHTS CORRESPONDING TO*
* GREEN LH, NOSE AND RH ARROWS REMAIN*
* OFF.                               *
**************************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	-

```
********************************************************************
* Open doors using Emergency system (Ref. 32-32-00, Adjustment/    *
* Test)                                                            *
* Prepare system as detailed in paragraph 2.                       *
* Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).    *
* Place landing gear Normal control lever in DOWN position.        *
* The doors close.                                                 *
********************************************************************
          |                                              |
          NO                                             YES
          |                                              |
------------------------------------              -------------------
| Replace visor uplock microswitch |              | Ref. Chart 140. |
| M32 [56].                        |              -------------------
------------------------------------
```

Chart 121

```
***************************************-------------------------------
* RED WARNING LIGHTS CORRESPONDING TO*| GROUND EQUIPMENT REQUIRED    |
* GREEN LH AND RH ARROWS REMAIN OFF. *|------------------------------|
**************************************| DESCRIPTION          PART NO|
                                      |------------------------------|
                                      | MULTIMETER                 - |
                                      --------------------------------

**********************************************************************
* Open door 151DB                                                    *
* Continuity between main gear door selector G30 [33] terminals A    *
* and C.                                                             *
**********************************************************************
      |           |
      |           |    ----------------------------------------------
     YES         NO----| Replace main gear door selector G30 [33].|
      |                ----------------------------------------------
      |
**********************************************************************
* Continuity between main gear and door safety electrovalve G31      *
* [34] terminals A and C.                                            *
**********************************************************************
     |                                   |
    YES                                  NO
     |                                   |
------------------------------------  ----------------------------------
| Replace main gear return and     |  | Replace main gear and door     |
| depressurization selector valve.|  | safety electrovalve G31 [34].|
------------------------------------  ----------------------------------
```

Chart 123

```
**************************************-------------------------------
* RED WARNING LIGHT CORRESPONDING TO *| GROUND EQUIPMENT REQUIRED   |
* GREEN NOSE ARROW REMAINS OFF.      *|-----------------------------|
**************************************| DESCRIPTION        PART NO  |
                                      |-----------------------------|
                                      | MULTIMETER             -    |
                                      -------------------------------

**********************************************************************
* Open gear doors using Emergency system (Ref. 32-32-00,             *
* Adjustment/Test).                                                  *
* NOTE : At end of trouble shooting close doors using Green          *
*        hydraulic system ; landing gear Normal control lever in     *
*        DOWN position.                                              *
* Continuity between nose gear door selector G29 [32] terminals A    *
* and C.                                                             *
**********************************************************************
             |                                  |
            YES                                 NO
             |                                  |
********************************  ----------------------------------
* Continuity between nose gear *  | Replace nose gear door selector |
* and door safety electrovalve *  | G29 [32].                       |
* G32 [35] terminals A and C.  *  ----------------------------------
********************************
        |            |            ----------------------------------
        |            NO-----------| Replace nose gear and door      |
        |                         | safety electrovalve G32 [35].   |
        |                         ----------------------------------
        |
        |                         ----------------------------------
        YES-----------------------| Replace nose gear return and    |
                                  | depressurization selector valve |
                                  | [85].                           |
                                  ----------------------------------
```

Chart 124

```
**************************************-------------------------------
* AMBER LH SHORT, UPPER LOCKS AND RH *| GROUND EQUIPMENT REQUIRED     |
* SHORT INDICATOR LIGHTS REMAIN ON.  *|-------------------------------|
* GREEN LH, NOSE, T AND RH ARROWS ARE*| DESCRIPTION          PART NO  |
* OFF.                               *|-------------------------------|
**************************************| MULTIMETER              -     |
                                      -------------------------------

*******************************************************************
* Prepare system as detailed in paragraph 2.                      *
* Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).   *
* Open gear doors (Ref. 32-00-00, Servicing).                     *
* One nose gear door remains uplocked.                            *
*******************************************************************
        |                                 |
        NO                                YES
        |                                 |
********************************   ----------------------------------
* One main or nose gear door is*  | Replace uplock of door concerned|
* not completely open.         *  | LH fwd [63], LH aft [64]        |
********************************  | RH fwd [65], RH aft [66].       |
        |             |            ----------------------------------
        |             |
        |             |            ----------------------------------
        NO            YES---------| Replace jack of door concerned. |
        |                         | Main gear LH [70], RH [71].     |
        |                         | Nose gear LH [72], RH [73].     |
        |                          ----------------------------------
**********************************
* Place landing gear Normal      *
* control lever in DOWN position *
* Check voltage between test     *
* connector UT1837 terminals 9A  *
* and 9B.  (Door 123AB, relay box*
* 2-123, relay G10).             *
**********************************
        |               |
        |               |          ----------------------------------
        0V              28V-------| Replace landing gear and tail   |
        |                         | gear lower control relay G10    |
        |                         | [13].                           |
        |                          ----------------------------------
        |
```

Chart 125 (Sheet 1 of 2)

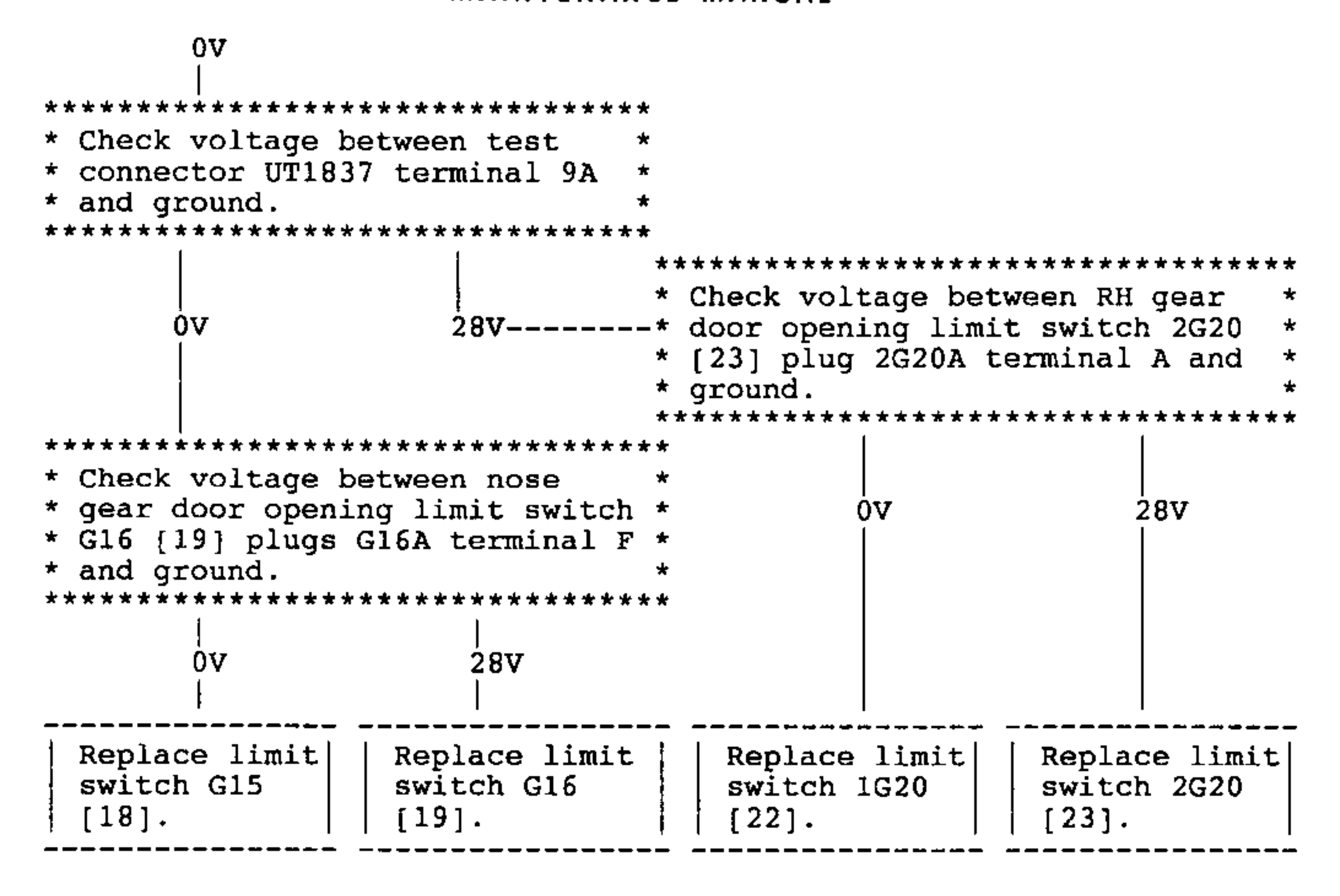


Chart 125 (Sheet 2 of 2)

```
*************************************
* AMBER UPPER LOCKS INDICATOR LIGHT *
* REMAINS ON.                       *
* GREEN NOSE ARROW IS OFF.          *
*************************************

*********************************************************************
* Landing gear extension was possible using Emergency system.       *
*********************************************************************
              |                                  |
             YES                                 NO
              |                                  |
---------------------------------  ----------------------------------
| Replace nose gear selector G26|  | Replace nose gear uplock [69]. |
| [29].                         |  ----------------------------------
---------------------------------
```

Chart 127

AMBER UPPER LOCKS INDICATOR LIGHT REMAINS ON.
SEQUENCE NOT INTERRUPTED.

- Prepare system as detailed in paragraph 2.
- Open gear doors (Ref. 32-00-00, Servicing).
- Install safety sleeves on door jacks.
- Disconnect nose gear uplocked microswitch G17 [20] plug G17A.
- Amber UPPER LOCKS indicator light is on.

NO: Replace microswitch G17 [20].

YES:

- Connect plug G17A and disconnect LH gear uplocked microswitch G12 [15] plug G12A.
- Amber UPPER LOCKS indicator light is on.

NO: Replace microswitch G12 [15].

YES:

- Connect plug G12A and disconnect RH gear uplocked microswitch G13 [16] plug G13A.
- Amber UPPER LOCKS indicator light is on.

YES: Replace relay G77 [48].

NO: Replace micro switch G13 [16].

Chart 128

```
**************************************-------------------------------
* RED WARNING LIGHT CORRESPONDING TO *| GROUND EQUIPMENT REQUIRED    |
* GREEN T ARROW REMAINS OFF.         *|------------------------------|
* SEQUENCE NOT INTERRUPTED.          *| DESCRIPTION          PART NO |
**************************************|------------------------------|
                                      | MULTIMETER               -   |
                                      --------------------------------

**********************************************************************
* The tail landing gear is downlocked.                               *
**********************************************************************
             |                                      |
             NO                                    YES
             |                                      |
*****************************************  ***************************
* Open gear doors using Emergency system *  * Continuity between      *
* (Ref. 32-32-00, Adjustment/Test).      *  * tail gear uplocked      *
* Continuity between tail gear selector  *  * microswitch G56 [39]    *
* G28 [31] terminals F and D.            *  * terminals A and B.      *
*****************************************  ***************************
        |              |                        |            |
        NO            YES                       NO          YES
        |              |                        |            |
---------------- ----------------  ----------------  ----------------
| Replace tail | | Replace relay|  | Replace tail  |  | Replace tail |
| gear selector| | G10 [13].    |  | gear uplocked |  | gear down-   |
| G28 [31].    | ----------------  | microswitch   |  | locked micro-|
----------------                   | G56 [39].     |  | switch G55   |
                                   -----------------  | [38].        |
                                                      ----------------
```

Chart 129

* GREEN T ARROW REMAINS OFF.
* SEQUENCE NOT INTERRUPTED.

* Visually check that tail gear is downlocked.

YES → Replace tail gear downlocked micro-switch G55 [38].

NO → Replace tail gear actuating cylinder [74].

Chart 131

```
*************************************
* AMBER LH SHORT OR RH SHORT INDI-   *
* CATOR LIGHT REMAINS ON.            *
*************************************

*******************************************************************
* Both main gear shortening locks are locked.                     *
* Length locked : 0 mm (0 in.).                                  *
* Length unlocked : 15 mm (0.590 in.).                            *
*******************************************************************
            |                                  |
           YES                                 NO
            |                                  |
---------------------------------      ---------------------------
| Replace faulty shortening lock |     | Replace faulty shortening|
| microswitch.                   |     | lock.                    |
| LH; G63 [46], RH; G64 [47].    |     | LH; [75], RH; [76].      |
---------------------------------      ---------------------------
```

Chart 132

RED WARNING LIGHTS CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	

NOTE : Gear doors are open.
Prepare system as detailed in paragraph 2.
Make certain that nose wheels are centred.
Place landing gear Normal control lever in UP position.
On relay box 2-123, ground test connector UT1837-14 terminal B (door 123AB).
In hydraulics bay, check voltage between main gear selector G27 plug G27A terminals F and D.

- 28V → Disconnect ground from test connector UT1837-14 terminal B. Place landing gear Normal control lever in DOWN position. Check voltage between test connector UT 1837-6 terminals C and D.
  - 28V → Replace relay G11 [14].
  - 0V → Check voltage between test connector UT1837-6 terminal C and ground.
    - 28V → Sheet 2
    - 0V → Replace micro-switch G22 [25].
- 0V → Disconnect ground from test connector UT1837-14 terminal B. Replace circuit breaker G1 [1].

Chart 133 (Sheet 1 of 2)

```
                         28V
                          |
*********************************************************************
* Check voltage between LH gear downlocked microswitch G24 [27]     *
* plug G24A terminal C and ground.                                  *
*********************************************************************
        |                                  |
        0V                                28V
        |                                  |
---------------------- ********************************************
| Connect plug G24A.  | * Connect plug G24A.                       *
| Replace microswitch | * Check voltage between door ground opening*
| G23 [26].           | * microswitch G25 [28] plug G25A terminal  *
---------------------- * D and ground.                            *
                       ********************************************
                                 |                   |
                                28V                  0V
                                 |                   |
                       ---------------------- --------------------
                       | Replace microswitch| | Connect plug G25A|
                       | G25 [28].          | | Replace LH gear  |
                       ---------------------- | downlocked micro-|
                                              | switch G24 [27]. |
                                              --------------------
```

Chart 133 (Sheet 2 of 2)

```
***************************************-------------------------------
* DOOR GROUND OPENING FAILURE          *| GROUND EQUIPMENT REQUIRED    |
***************************************|-----------------------------|
                                       | DESCRIPTION        PART NO  |
                                       |-----------------------------|
                                       | KEY                 734116  |
                                       | MULTIMETER             -    |
                                       -------------------------------

**********************************************************************
* Prepare system as detailed in paragraph 2.                         *
* Make certain that visor is not uplocked.                           *
* Place landing gear Normal control lever in DOWN position.          *
* Place gear door ground opening control in doors open position      *
* (Ref. 32-00-00, Servicing).                                        *
* In hydraulics bay,check voltage between main gear and door safety*
* electrovalve G31 [34] plug G31A terminals A and C.                 *
**********************************************************************
 |   ******************************************************      |
 0V-* Check voltage between plug G31A terminal A and ground*   28V
     ****************************************************** Sheet 2
      |    ****************************************    |
      0V--* Check voltage between test connector   *   28V
          * UT1837-12 terminal A and ground (door   * Sheet 3
          * 123AB, relay box 2-123).                *
          ******************************************
                |              |  ----------------------------------
               28V             0V---| Replace circuit breaker G3 [3].|
                |                 ----------------------------------
**********************************************************************
* Prepare ADC system for test (Ref. 34-11-00, Adjustment/Test).      *
* On ADC control panel place ADC 1 switch in ON position.            *
* Place ADC 1 selector switch in 2 position.                         *
* Blue TEST indicator light comes on (after one minute approx).      *
**********************************************************************
               |              |      --------------------------------
              YES             NO------| Replace microswitch M32 [56].|
               |                     --------------------------------
**********************************************************************
* Place landing gear Normal control lever in UP position.            *
* Check voltage between plug G31A terminal A and ground.             *
**********************************************************************
               |                                   |
              0V                                  28V
               |                                   |
---------------------------           --------------------------------
| Replace relay X139 [57]. |           | Replace microswitch M32 [56].|
---------------------------           --------------------------------
```

Chart 140 (Sheet 1 of 3)

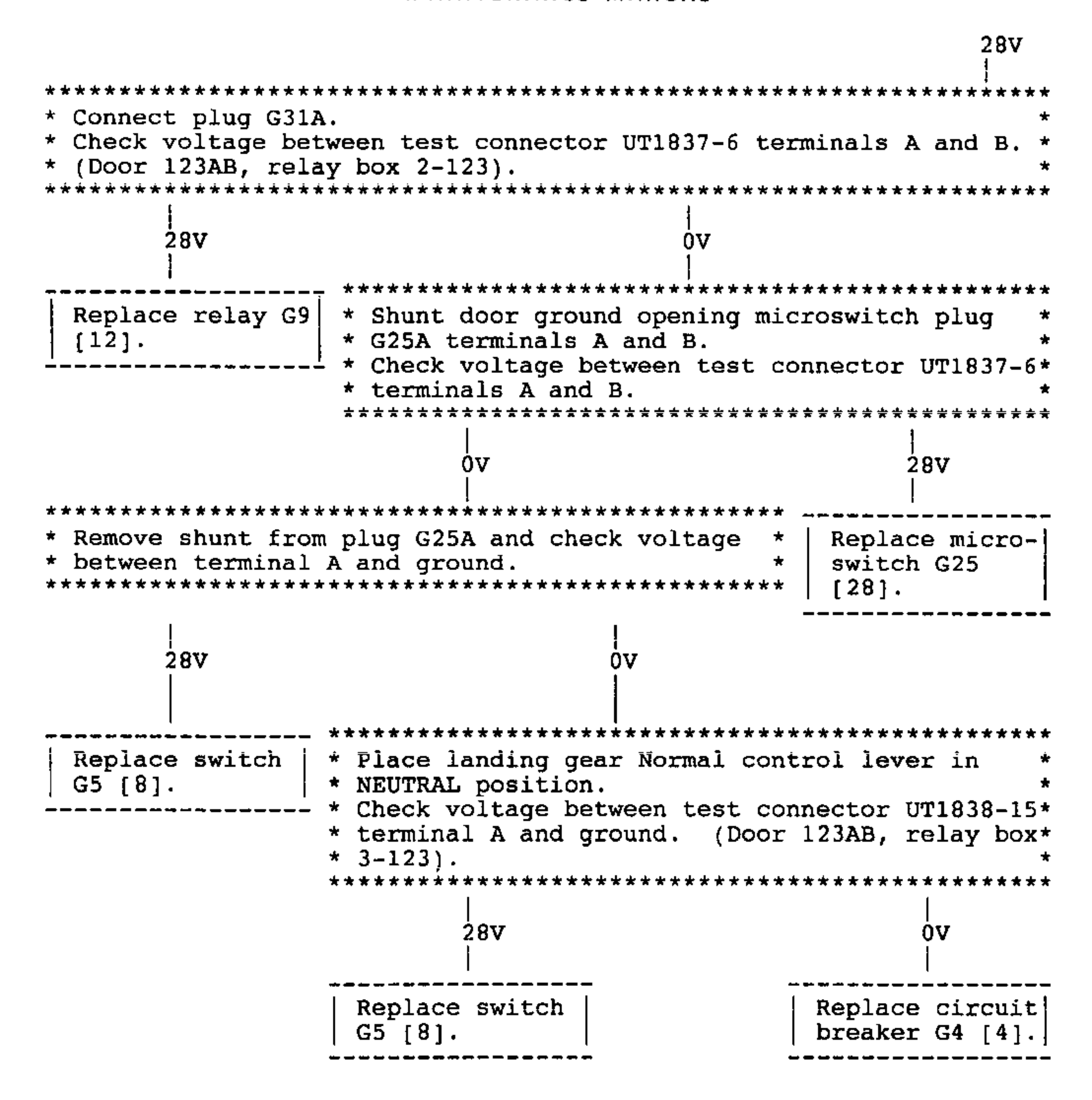


Chart 140 (Sheet 2 of 3)

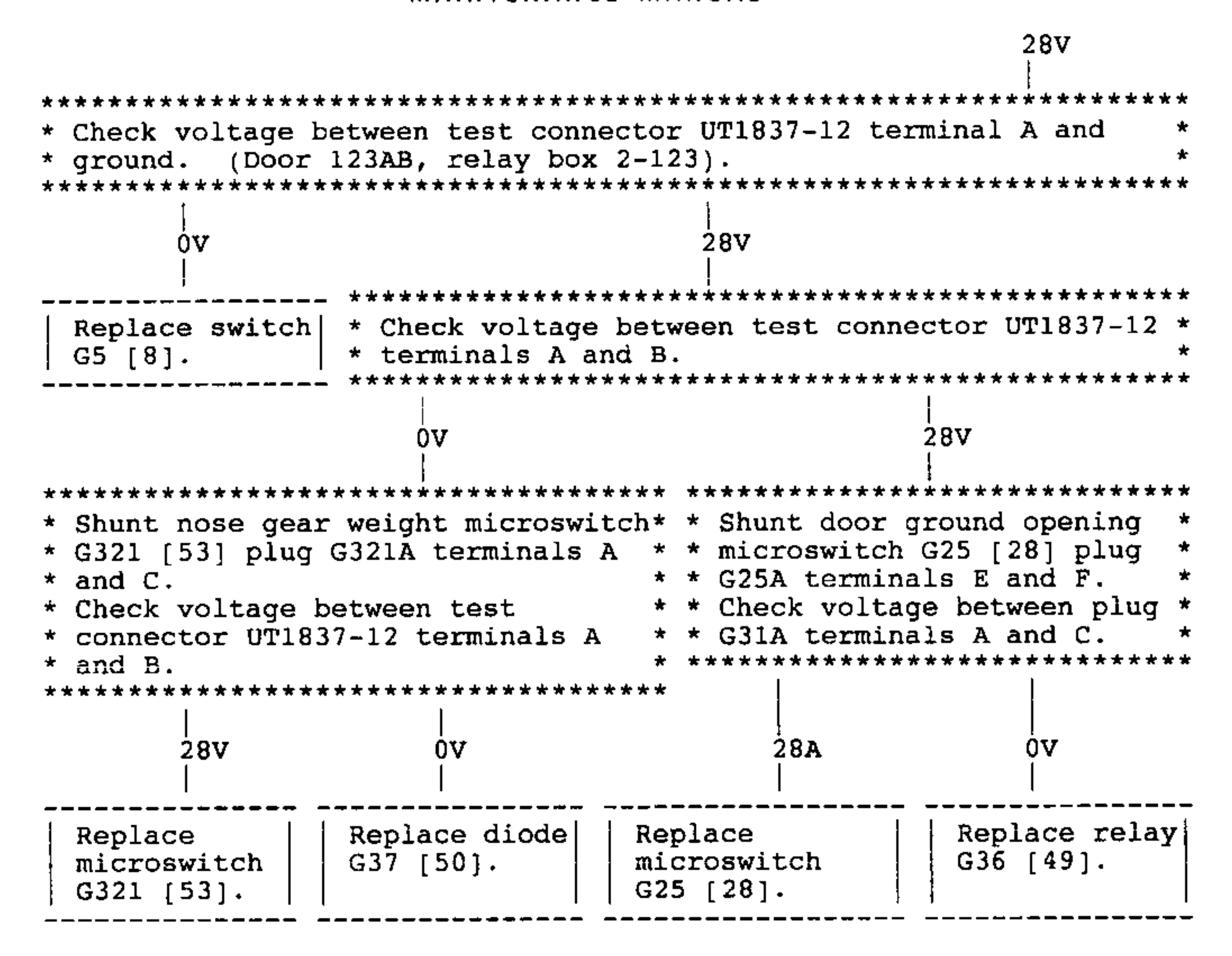


Chart 140 (Sheet 3 of 3)

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[1] Circuit breaker		15-215	G 1	Map Ref. A 6	24-50-00 R/I	32-31-01
[2] Circuit breaker		15-215	G 2	Map Ref. A 7	24-50-00 R/I	32-31-01
[3] Circuit breaker		15-215	G 3	Map Ref. A 8	24-50-00 R/I	32-31-01
[4] Circuit breaker		15-215	G 4	Map Ref. A 9	24-50-00 R/I	32-31-01
[5] Circuit breaker		1-213	G51	Map Ref. N16	24-50-00 R/I	32-31-01
[6] Circuit breaker		1-213	G292	Map Ref. M17	24-50-00 R/I	32-31-01
[7] Circuit breaker		3-213	G294	Map Ref. B 9	24-50-00 R/I	32-31-01
[8] Landing gear normal control switch		10-211	G 5	First Officer's instrument panel	32-31-91 R/I	32-31-01
[9] Landing gear doors open control relay	123AB	2-123	G 6	Fwd rack, under floor	32-00-00 R/I	32-31-01
[10] Landing gear and tail gear raise control relay	123AB	2-123	G 7	Fwd rack, under floor	32-00-00 R/I	32-31-01
[11] Landing gear doors closed control relay	123AB	2-123	G 8	Fwd rack, under floor	32-00-00 R/I	32-31-01
[12] Landing gear doors open control relay	123AB	2-123	G 9	Fwd rack, under floor	32-00-00 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[13] Landing gear and tail gear lower control relay	123AB	2-123	G10	Fwd rack, under floor	32-00-00 R/I	32-31-01
[14] Landing gear doors closed control relay	123AP	2-123	G11	Fwd rack, under floor	32-00-00 R/I	32-31-01
[15] LH gear uplocked micro-switch	731	571	G12	On LH main gear uplock	32-31-15 R/I	32-31-01
[16] RH gear uplocked micro-switch	741	671	G13	On RH main gear uplock	32-31-15 R/I	32-31-01
[17] Nosewheel centred micro-switch		715	G14	On steer-ing jack	32-31-94 R/I	32-31-01
[18] Nose gear door opening limit switch	711	127	G15		32-31-95 R/I	32-31-01
[19] Nose gear door opening limit switch	712	128	G16		32-31-95 R/I	32-31-01
[20] Nose gear uplocked micro-switch	711	127	G17	On nose gear uplock	32-31-67 R/I	32-31-01
[21] LH gear bogie beam aligned micro-switch		733	G18	On LH main gear fwd pitch damper	32-31-92 R/I	32-31-01
[22] LH gear door opening limit switch		731	1G20-1	On LH main gear door jack	32-31-14 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[23] RH gear door opening limit switch		741	2G20-1	On RH main gear door jack	32-31-14 R/I	32-31-01
[24] RH gear bogie beam aligned micro-switch		743	G21	On RH main gear fwd pitch damper	32-31-92 R/I	32-31-01
[25] Nose gear downlocked microswitch		715	G22	On nose gear drag strut	32-31-71 R/I	32-31-01
[26] RH gear downlocked microswitch		743	G23	On RH main gear brace strut	32-31-28 R/I	32-31-01
[27] LH gear downlocked microswitch		733	G24	On LH main gear brace strut	32-31-28 R/I	32-31-01
[28] Door ground opening microswitch		733	G25	On LH main gear leg	32-31-23 R/I	32-31-01
[29] Nose gear selector	711	127	G26		32-31-65 R/I	32-31-01
[30] Main gear selector	151DB	152	G27		32-31-11 R/I	32-31-01
[31] Tail gear selector		313	G28		32-31-81 R/I	32-31-01
[32] Nose gear door selector	711	127	G29		32-31-61 R/I	32-31-01
[33] Main gear door selector	151DB	151	G30		32-31-11 R/I	32-31-01
[34] Main gear and door safety electrovalve	151DB	152	G31		32-31-32 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
[35] Nose gear and door safety electrovalve	711	127	G32		32-31-76 R/I	32-31-01
[36] RH gear downlocked microswitch		743	G53	On RH main gear brace strut	32-31-28 R/I	32-31-01
[37] LH gear downlocked microswitch		733	G54	On LH main gear brace strut	32-31-28 R/I	32-31-01
[38] Tail gear downlocked microswitch		752	G55	On tail gear actuating cylinder	32-31-82 R/I	32-31-01
[39] Tail gear uplocked micro-switch		752	G56	On tail gear actuating cylinder	32-31-82 R/I	32-31-01
[40] LH main gear door uplocked microswitch	731	571	G57	On LH main gear door uplock	32-31-12 R/I	32-31-01
[41] RH main gear door uplocked microswitch	741	671	G58	On RH main gear door uplock	32-31-12 R/I	32-31-01
[42] Nose gear LH door uplocked microswitch	711	127	G59	On door uplock	32-31-62 R/I	32-31-01
[43] Nose gear RH door uplocked microswitch	712	128	G60	On door uplock	32-31-62 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[44] Nose gear LH door uplocked microswitch	711	127	G61	On door uplock	32-31-62 R/I	32-31-01
[45] Nose gear RH door uplocked microswitch	712	128	G62	On door uplock	32-31-62 R/I	32-31-01
[46] LH shortening lock microswitch	732AB	733	G63	On LH main gear shortening lock	32-31-27 R/I	32-31-01
[47] RH shortening lock microswitch	742AB	743	G64	On RH main gear shortening lock	32-31-27 R/I	32-31-01
[48] UPPER LOCKS transfer relay	123AB	3-123	G77	Fwd rack, under floor	32-00-00 R/I	32-61-01
[49] Safety electrovalve holding relay	123AB	2-123	G36	Fwd rack, under floor	32-00-00 R/I	32-31-01
[50] Diode	123AB	2-123	G37	Fwd rack, under floor	32-00-00 R/I	32-31-01
[51] LH Landing gear weight relay	123AB	2-123	G300	Fwd rack, under floor	32-00-00 R/I	32-31-01
[52] RH landing gear weight relay	123AB	3-123	G312	Fwd rack, under floor	32-00-00 R/I	32-31-01
[53] Nose gear weight micro-switch		715	G321	On nose gear torque link	32-31-96 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[54] LH gear weight micro-switch		733	G322	On LH main gear leg	32-31-93 R/I	32-31-01
[55] RH gear weight micro-switch		743	G324	On RH main gear leg	32-31-93 R/I	32-31-01
[56] Visor uplock micro-switch	113DB	113	M32			32-31-01
[57] Static inverter relay		19-215	X139		32-00-00 R/I	32-31-01
[58] LH main gear shock absorber					32-11-27 R/I	
[59] RH main gear shock absorber					32-11-27 R/I	
[60] Nose gear shock absorber					32-21-27 R/I	
[61] LH main gear door uplock	731	571	0408		32-31-12 R/I	
[62] RH main gear door uplock	741	671	0409		32-31-12 R/I	
[63] Nose gear LH door fwd uplock	711	127	3506		32-31-62 R/I	
[64] Nose gear LH door aft uplock	711	127	3508		32-31-62 R/I	

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[65] Nose gear RH door fwd uplock	712	128	3507		32-31-62 R/I	
[66] Nose gear RH door aft uplock	712	128	3509		32-31-62 R/I	
[67] LH main gear uplock	731	571	3406		32-31-15 R/I	
[68] RH main gear uplock	743	671	3407		32-31-15 R/I	
[69] Nose gear uplock	711	127	3504		32-31-67 R/I	
[70] LH main gear door jack	731	731	3404		32-31-14 R/I	
[71] RH main gear door jack	741	741	3405		32-31-14 R/I	
[72] Nose gear LH door jack	711	127	3502		32-31-64 R/I	
[73] Nose gear RH door jack	712	128	3503		32-31-64 R/I	
[74] Tail gear actuating cylinder		313	1318		32-31-82 R/I	
[75] LH shortening lock	732AB	733	3410	On LH main gear leg	32-31-27 R/I	
[76] RH shortening lock	742AB	743	3411	On RH main gear leg	32-31-27 R/I	
[77] RH telescopic brace strut		743	3413		32-31-28	

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[78] LH telescopic brace strut		733	3414		32-31-28 R/I	
[79] Nose gear telescopic drag strut		715	3513		32-31-71 R/I	
[80] Pitch damper		733 743			32-11-31 R/I	
[81] LH main gear hydraulic sequence valve		733	4104	On LH main gear leg	32-31-26 R/I	
[82] RH main gear hydraulic sequence valve		743	4105	On RH main gear leg	32-31-26 R/I	
[83] LH main gear metering valve		572	4010		32-31-17 R/I	
[84] RH main gear metering valve		672	4011		32-31-17 R/I	
[85] Nose gear return and de-pressurization selector valve	711	127	4014		32-32-13 R/I	
[86] Main gear return and de-pressurization selector valve	151DB	152	4012		32-32-31 R/I	

NORMAL EXTENSION AND RETRACTION - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, SERVICING.

1. General

The following information is intended to enable faults found in the Normal extension and retraction system to be quickly rectified.
The defect can be isolated with the aid of the trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Prepare

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

A. On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

B. On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

C. Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G291	M16
LH UC WEIGHT SW "A" SYS SUP		G292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G295	M18
UC POSN IND		G 51	N16
UC DOWN LOCK VISUAL IND	3-213	G241	C 8
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		G293	B 8
RH UC WEIGHT SW "B" SYS SUP		G294	B 9
NOSE U/C W/SW "B" SUP		G296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

D. Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

3. Trouble Shooting

A. Landing Gear Retraction Sequence

```
*****************************************************
* It is possible to operate landing gear Normal con-*
* trol lever from NEUTRAL to UP (in flight).  IF    *
*****************************************************
  ||    |
  ||    |    ----------------------------------------------------
  ||    |   | Not possible to operate landing gear Normal      |
  OK  NOT OK----| control lever from NEUTRAL to UP.            |
  ||    |   | On FAULT ANNUNCIATOR :                           |
  ||    |   | LH (SHOCK ABSORB) indicator light is on.         |
  ||    |   | Replace LH main gear shock absorber. [58]        |
  ||    |    ----------------------------------------------------
  ||    |    ----------------------------------------------------
  ||    |   | Not possible to operate landing gear Normal      |
  ||  NOT OK----| control lever from NEUTRAL to UP.            |
  ||        | Ref. Chart 102.                                  |
  ||         ----------------------------------------------------
*****************************************************
* Red warning lights corresponding to green LH, NOSE*
* and RH arrows come on.  IF                        *
*****************************************************
  ||    |
  ||    |    ----------------------------------------------------
  ||    |   | Red warning lights corresponding to green LH,    |
  ||    |   | NOSE and RH arrows remain off.                   |
  OK  NOT OK----| On FAULT ANNUNCIATOR :                       |
  ||    |   | RH-NOSE (SHOCK ABSORB), LH, RH (NOSE DOORS) and  |
  ||    |   | LH, RH (MAIN DOORS) indicator lights are on.     |
  ||    |   | Ref. Chart 103.                                  |
  ||    |    ----------------------------------------------------
  ||    |    ----------------------------------------------------
  ||    |   | Red warning lights corresponding to green LH,    |
  ||    |   | NOSE and RH arrows remain on.                    |
  ||  NOT OK----| On FAULT ANNUNCIATOR :                       |
  ||    |   | RH-NOSE (SHOCK ABSORB), NOSE (WHEEL ALIGN), LH,  |
  ||    |   | RH (NOSE DOORS) and LH, RH (MAIN DOORS)          |
  ||    |   | indicator lights are on.                         |
  ||    |   | Replace nose gear shock absorber. [60].          |
  ||    |    ----------------------------------------------------
  ||    |
```

NOT OK---- | Red warning light corresponding to green LH or RH arrow remains off.
Sequence not interrupted.
Replace faulty microswitch
- LH ; replace microswitch G57 [40]
- RH ; replace microswitch G58 [41].

NOT OK---- | Red warning lights corresponding to green LH, NOSE and RH arrows remain off.
On FAULT ANNUNCIATOR :
LH and RH (NOSE DOORS) and LH and RH (MAIN DOORS) indicator lights are on.
Ref. Chart 104.

NOT OK---- | Red warning lights corresponding to green LH, NOSE and RH arrows remain off.
Ref. Chart 105.

NOT OK---- | Red warning light corresponding to green NOSE arrow remains off.
On FAULT ANNUNCIATOR :
LH and RH (NOSE DOORS) indicator lights are on.
Ref. Chart 106.

NOT OK---- | Red warning lights corresponding to green LH and RH arrows remain off.
On FAULT ANNUNCIATOR :
LH and RH (MAIN DOORS) indicator lights are on.
Ref. Chart 107.

NOT OK---- | On FAULT ANNUNCIATOR :
RH or LH (NOSE DOORS) indicator light is on.
Ref. Chart 108.

```
 | |  |
 | |  |       ----------------------------------------------
 | |  |       | Red warning light corresponding to green LH |
 | |  |       | arrow remains off.                          |
 | |  NOT OK----| On FAULT ANNUNCIATOR :                    |
 | |  |       | LH (MAIN DOORS) indicator light is on.      |
 | |  |       | Replace LH main gear uplock [61].           |
 | |  |       ----------------------------------------------
 | |  |       ----------------------------------------------
 | |  |       | Red warning light corresponding to green RH |
 | |  |       | arrow remains off.                          |
 | |  NOT OK----| On FAULT ANNUNCIATOR :                    |
 | |  |       | RH (MAIN DOORS) indicator light is on.      |
 | |  |       | Replace LH main gear door uplock [62].      |
 | |  |       ----------------------------------------------
 | |  |       ----------------------------------------------
 | |  |       | On FAULT ANNUNCIATOR :                      |
 | |  NOT OK----| LH or RH (MAIN DOORS) indicator light is on. |
 | |          | Replace jack of main gear door concerned.   |
 | |          | LH door jack [70], RH door jack [71].       |
 | |          ----------------------------------------------
****************************************************
* Green LH, NOSE and RH arrows go off.             *
* NOTE : Amber UPPER LOCKS indicator light comes on *
*        during gear movement.                      *
*        Red warning light corresponding to green T *
*        arrow comes on during movement of tail gear*
* IF                                                *
****************************************************
 | |    |
 OK    NOT OK----| Green LH, NOSE, T and RH arrows remain on.  |
 | |    |        | Ref. Chart 111.                              |
 | |    |        ----------------------------------------------
 | |    |        ----------------------------------------------
 | |    |        | Green LH, NOSE, T and RH arrows remain on.  |
 | |   NOT OK----| On FAULT ANNUNCIATOR :                      |
 | |    |        | NOSE (WHEEL ALIGN) indicator light is on.   |
 | |    |        | Replace nosewheel centred microswitch G14[17].|
 | |    |        ----------------------------------------------
 | |    |
```

NOT OK----	Green LH, NOSE and RH arrows remain on. On FAULT ANNUNCIATOR : LH or RH (BOGIE BEAM) indicator light is on. Ref. Chart 113.
NOT OK----	Green LH, NOSE and RH arrows remain on. Replace landing gear and tail gear raise control relay G7 [10].
NOT OK----	Green LH and RH arrows remain on. Replace main gear selector G27 [30].
NOT OK----	Green NOSE arrow remains on. Sequence interrupted. Ref. Chart 116. Sequence not interrupted. Replace microswitch G22 [25].
NOT OK----	Green LH arrow remains on. Amber UPPER LOCKS indicator light comes on. Replace LH main gear telescopic brace strut [78].
NOT OK----	Green RH arrow remains on. Replace RH main gear telescopic brace strut. [77].
NOT OK----	Amber UPPER LOCKS indicator light does not come on. Sequence not interrupted : Ref. Chart 117.

```
      |  |  |
      |  |  |           ----------------------------------------------
      |  | NOT OK----| Amber UPPER LOCKS indicator light remains on.|
      |  |  |        | Ref. Chart 118.                              |
      |  |  |           ----------------------------------------------
      |  |  |           ----------------------------------------------
      |  |  |        | Green T arrow remains on.                    |
      |  | NOT OK----| Sequence not interrupted.                    |
      |  |  |        | Ref. Chart 119.                              |
      |  |  |           ----------------------------------------------
      |  |  |           ----------------------------------------------
      |  |  |        | Red warning light corresponding to green T   |
      |  | NOT OK----| arrow does not come on.                      |
      |  |  |        | Sequence not interrupted :                   |
      |  |  |        | Ref. Chart 120.                              |
      |  |  |           ----------------------------------------------
      |  |  |           ----------------------------------------------
      |  |  |        | Red warning light corresponding to green T   |
      |  | NOT OK----| arrow remains on.                            |
      |  |           | Sequence not interrupted :                   |
      |  |           | Ref. Chart 121.                              |
      |  |              ----------------------------------------------
*****************************************************
* All indicator lights are off.  IF                 *
*****************************************************
      |  |  |           ----------------------------------------------
      |  |  |        | Red warning lights corresponding to green LH,|
     OK NOT OK----| NOSE and RH arrows remain on.                 |
      |  |  |        | Ref. Chart 122.                              |
      |  |  |           ----------------------------------------------
      |  |  |           ----------------------------------------------
      |  |  |        | Red warning light corresponding to green NOSE|
      |  | NOT OK----| arrows remains on.                           |
      |  |  |        | Ref. Chart 123.                              |
      |  |  |           ----------------------------------------------
      |  |  |           ----------------------------------------------
      |  |  |        | Red warning lights corresponding to green LH |
      |  | NOT OK----| and RH arrows remain on.                     |
      |  |  |        | Replace main gear door selector G30 [33].    |
      |  |  |           ----------------------------------------------
      |  |  |
```

```
 ||   |
 ||   |     ---------------------------------------------------
 ||   |    | Red warning light corresponding to green LH or   |
 ||   NOT OK----| RH arrow remains on.                        |
 ||        | Ref. Chart 125.                                  |
 ||         ---------------------------------------------------
******************************************************
* End of landing gear retraction sequence.            *
* Restore landing gear retraction and extension       *
* system to normal operating condition.               *
******************************************************
```

B. Landing Gear Extension Sequence

```
****************************************************
* Amber UPPER LOCKS, LH SHORT and RH SHORT indicator*
* lights come on.                                  *
* Red warning lights corresponding to green LH, NOSE*
* and RH arrows come on. IF                        *
****************************************************
   ||     |
   ||     |       ----------------------------------------------
   ||     |      | Red warning lights corresponding to green LH, |
   OK   NOT OK---| NOSE and RH arrows remain off.                |
   ||     |      | Amber LH SHORT, RH SHORT and UPPER LOCKS indi-|
   ||     |      | cator lights remain off.                      |
   ||     |      | Ref. Chart 126.                               |
   ||     |       ----------------------------------------------
   ||     |       ----------------------------------------------
   ||     |      | Amber LH SHORT or RH SHORT indicator light does|
   ||     |      | not come on.                                  |
   ||   NOT OK---| Sequence not interrupted :                    |
   ||     |      | LH SHORT ; replace microswitch G63 [46].      |
   ||     |      | RH SHORT ; replace microswitch G64 [47].      |
   ||     |       ----------------------------------------------
   ||     |       ----------------------------------------------
   ||     |      | Amber UPPER LOCKS indicator light does not come|
   ||   NOT OK---| on.                                           |
   ||     |      | Sequence not interrupted :                    |
   ||     |      | Replace relay G77 [48].                       |
   ||     |       ----------------------------------------------
   ||     |       ----------------------------------------------
   ||     |      | Red warning lights corresponding to green LH, |
   ||   NOT OK---| NOSE and RH arrows remain off.                |
   ||     |      | Ref. Chart 127.                               |
   ||     |       ----------------------------------------------
   ||     |       ----------------------------------------------
   ||     |      | Red warning light corresponding to green NOSE |
   ||   NOT OK---| arrow remains off.                            |
   ||     |      | Ref. Chart 128.                               |
   ||     |       ----------------------------------------------
   ||     |       ----------------------------------------------
   ||     |      | Red warning lights corresponding to green LH  |
   ||   NOT OK---| and RH arrows remain off.                     |
   ||     |      | Ref. Chart 129.                               |
   ||     |       ----------------------------------------------
   ||     |
```

```
 ||      |
 ||      |               -------------------------------------------------
 ||      |              | Red warning light corresponding to green LH or |
 ||      |              | RH arrow remains off.                           |
 ||      |              | Sequence interrupted.                           |
 ||      NOT OK---------| Replace uplock of main gear door concerned      |
 ||      |              | LH uplock [61], RH uplock [62].                 |
 ||      |              | Sequence not interrupted :                      |
 ||      |              | LH ; replace microswitch G57 [40]               |
 ||      |              | RH ; replace microswitch G58 [41].              |
 ||      |               -------------------------------------------------
*****************************************************
* Green LH, NOSE, T and RH arrows come on.          *
* NOTE : Amber UPPER LOCKS indicator light goes off *
*        during landing gear uplock release.        *
*        Amber LH SHORT and RH SHORT indicator lights*
*        go off when corresponding landing gear     *
*        shortening mechanism downlocks.            *
*        Red warning light corresponding to green T *
*        arrow comes on during tail gear movement. IF*
*****************************************************
 ||      |               -------------------------------------------------
 OK    NOT OK-----------| Amber LH SHORT, RH SHORT and UPPER LOCKS       |
 ||      |              | indicator lights remain on.                     |
 ||      |              | Green LH, NOSE, T and RH arrows remain off.     |
 ||      |              | Ref. Chart 131.                                 |
 ||      |               -------------------------------------------------
 ||      |               -------------------------------------------------
 ||      |              | Amber LH SHORT, RH SHORT and UPPER LOCKS       |
 ||    NOT OK-----------| indicator lights remain on.                     |
 ||      |              | Green LH, NOSE, T and  RH arrows remain off.    |
 ||      |              | Replace landing gear and tail gear lower con-  |
 ||      |              | trol relay G10 [13].                            |
 ||      |               -------------------------------------------------
 ||      |               -------------------------------------------------
 ||      |              | Amber UPPER LOCKS indicator light remains on.  |
 ||    NOT OK-----------| Green NOSE arrow remains off.                   |
 ||      |              | Ref. Chart 133.                                 |
 ||      |               -------------------------------------------------
 ||      |               -------------------------------------------------
 ||      |              | Amber LH SHORT, RH SHORT and UPPER LOCKS indi- |
 ||    NOT OK-----------| cator lights remain on.                         |
 ||      |              | Green LH and RH arrows remain off.              |
 ||      |              | Replace main gear selector G27 [30].            |
 ||      |               -------------------------------------------------
```

```
NOT OK----| Amber UPPER LOCKS indicator light remains on.
          | Sequence not interrupted.
          | Ref. Chart 134.

NOT OK----| Amber LH SHORT and UPPER LOCKS indicator lights
          | remain on.
          | Green LH arrow remains off.
          | Replace LH main gear uplock [67].

NOT OK----| Amber RH SHORT and UPPER LOCKS indicator lights
          | remain on.
          | Green RH arrow remains off.
          | Replace RH main gear uplock [68].

NOT OK----| Red warning light corresponding to green T
          | arrow remains off.
          | Sequence not interrupted :
          | Ref. Chart 137.

NOT OK----| Green NOSE arrow remains off.
          | Visual indicator G245 indicates nose gear
          | telescopic drag strut not locked.
          | Replace nose gear telescopic drag strut [79].

NOT OK----| Green LH arrow remains off.
          | Visual indicator G246 indicates LH main gear
          | telescopic brace strut not locked.
          | Replace LH telescopic brace strut [78].

NOT OK----| Green RH arrow remains off.
          | Visual indicator G247 indicates RH main gear
          | telescopic brace strut not locked.
          | Replace RH telescopic brace strut [77].
```

```
  ||    |
  ||    |              -----------------------------------------------
  ||    |             | Green T arrow remains off.                    |
  ||    NOT OK----|  Sequence not interrupted :                    |
  ||    |             | Ref. Chart 141.                               |
  ||    |              -----------------------------------------------
  ||    |              -----------------------------------------------
  ||    |             | Green LH, RH or NOSE arrow does not come on.  |
  ||    |             | Sequence not interrupted :                    |
  ||    NOT OK----|  LH ; replace microswitch G54 [37].            |
  ||    |             | RH ; replace microswitch G53 [36].            |
  ||    |             | NOSE ; replace microswitch G22 [25].          |
  ||    |              -----------------------------------------------
  ||    |              -----------------------------------------------
  ||    |             | Green LH, RH, NOSE and T arrows and the corre-|
  ||    NOT OK----|  sponding red warning lights do not come on.   |
  ||    |             | Replace circuit breaker G51 [5].              |
  ||    |              -----------------------------------------------
  ||    |              -----------------------------------------------
  ||    |             | Amber LH SHORT or RH SHORT indicator light    |
  ||    NOT OK----|  remains on.                                   |
  ||                  | Ref. Chart 142.                               |
  ||                   -----------------------------------------------
******************************************************
* Red warning lights corresponding to green LH, NOSE *
* and RH arrows go off. IF                           *
******************************************************
  ||    |              -----------------------------------------------
  ||    |             | Red warning lights corresponding to green LH, |
  OK    NOT OK----|  NOSE and RH arrows remain on.                 |
  ||    |             | Ref. Chart 143.                               |
  ||    |              -----------------------------------------------
  ||    |              -----------------------------------------------
  ||    |             | Red warning light corresponding to green NOSE |
  ||    NOT OK----|  arrow remains on.                             |
  ||    |             | Ref. Chart 123.                               |
  ||    |              -----------------------------------------------
  ||    |              -----------------------------------------------
  ||    |             | Red warning lights corresponding to green LH  |
  ||    NOT OK----|  and RH arrows remain on.                      |
  ||    |             | Replace main gear door selector G30 [39].     |
  ||    |              -----------------------------------------------
```

NOT OK---- | Red warning light corresponding to green LH or RH arrow remains on. Ref. Chart 125.

* End of landing gear extension sequence.
* Restore landing gear retraction and extension system to normal operating condition.

C. Door Ground Opening

* Main and nose landing gear door ground opening failure.
* Ref. Chart 150

* Nose gear door ground opening failure.
* Ref. Chart 151.

* Main gear door ground opening failure.
* Ref. Chart 152.

* Restore door ground opening system to normal operating condition.

NOT POSSIBLE TO OPERATE LANDING GEAR NORMAL CONTROL LEVER FROM NEUTRAL TO UP.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

- Prepare system as described in paragraph 2.
- Check voltage between test connector UT 1837 terminal 3A and ground (door 123AB, relay box 2-123).

0V:

- Make certain that Green hydraulic system is depressurized.
- Disconnect LH gear weight micro-switch G322 [54].
- Possible to operate landing gear Normal control lever from NEUTRAL to UP.
  - YES: Replace microswitch G322 [54].
  - NO: Replace circuit breaker G292 [6].

28V:

- Continuity between relay G300 [51] terminals D2 and D3 (door 123AB, relay box 2-123).
  - NO: Replace relay G300 [51].
  - YES: Replace switch G5 [8]

Chart 102

```
**************************************
* RED WARNING LIGHTS CORRESPONDING TO*
* GREEN LH, NOSE AND RH ARROWS REMAIN*
* OFF.                               *
* ON FAULT ANNUNCIATOR :             *
* RH-NOSE (SHOCK ABSORB), LH, RH     *
* (NOSE DOORS) AND LH, RH (MAIN      *
* DOORS) INDICATOR LIGHTS ARE ON.    *
**************************************

********************************************************************
* Check RH main gear shock absorber.  (Ref. 32-11-27, Inspection/  *
* Check).                                                          *
********************************************************************
        |                                      |
        OK                                 NOT OK
        |                                      |
---------------------------           ------------------------------
| Replace nose gear shock |           | Replace RH main gear shock |
| absorber [60].          |           | absorber [59].             |
---------------------------           ------------------------------
```

Chart 103

RED WARNING LIGHTS CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN OFF.
ON FAULT ANNUNCIATOR :
LH AND RH (NOSE DOORS) AND LH AND RH (MAIN DOORS) INDICATOR LIGHTS ARE ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

Prepare system as described in paragraph 2.
Open main gear doors (Ref. 32-00-00, Servicing).
The doors open.

- YES: Sheet 2
- NO:

Place landing gear Normal control lever in DOWN position.
Check voltage between test connector UT 1837 terminal 12A and ground. (Door 123AB, relay box 2-123).

- 0V:
  - In hydraulics bay, check voltage between main gear and door safety electrovalve G31 [34] plug G31A terminal A and ground.
    - 0V: Replace circuit breaker G3 [3].
    - 28V: Replace switch G5 [8]
- 28V:
  - Continuity between microswitch M32 [56] terminals B and E. (Door 113BB).
    - YES: Replace relay X139 [57].
    - NO: Replace microswitch M32 [56].

Chart 104 (Sheet 1 of 5)

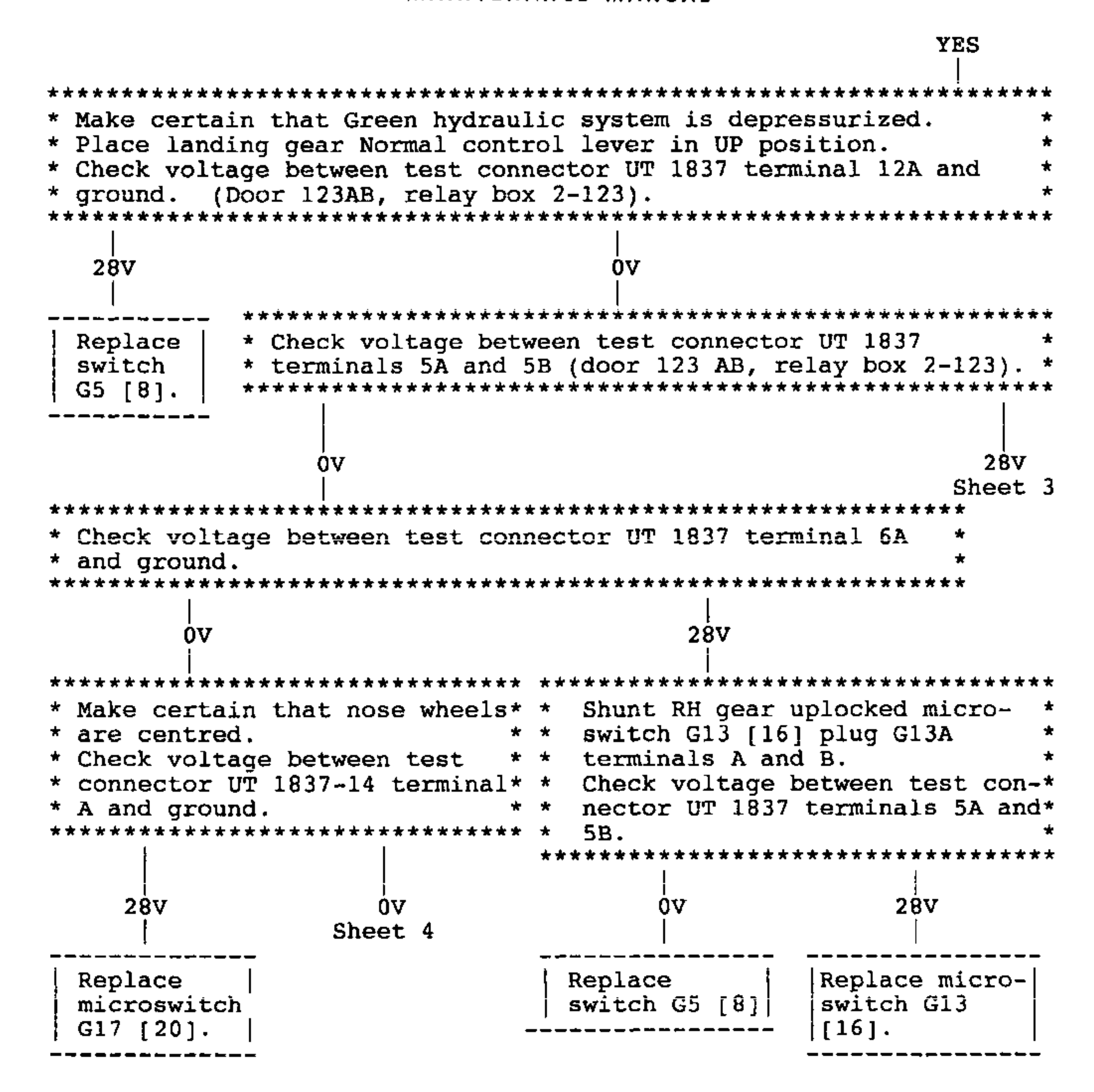


Chart 104 (Sheet 2 of 5)

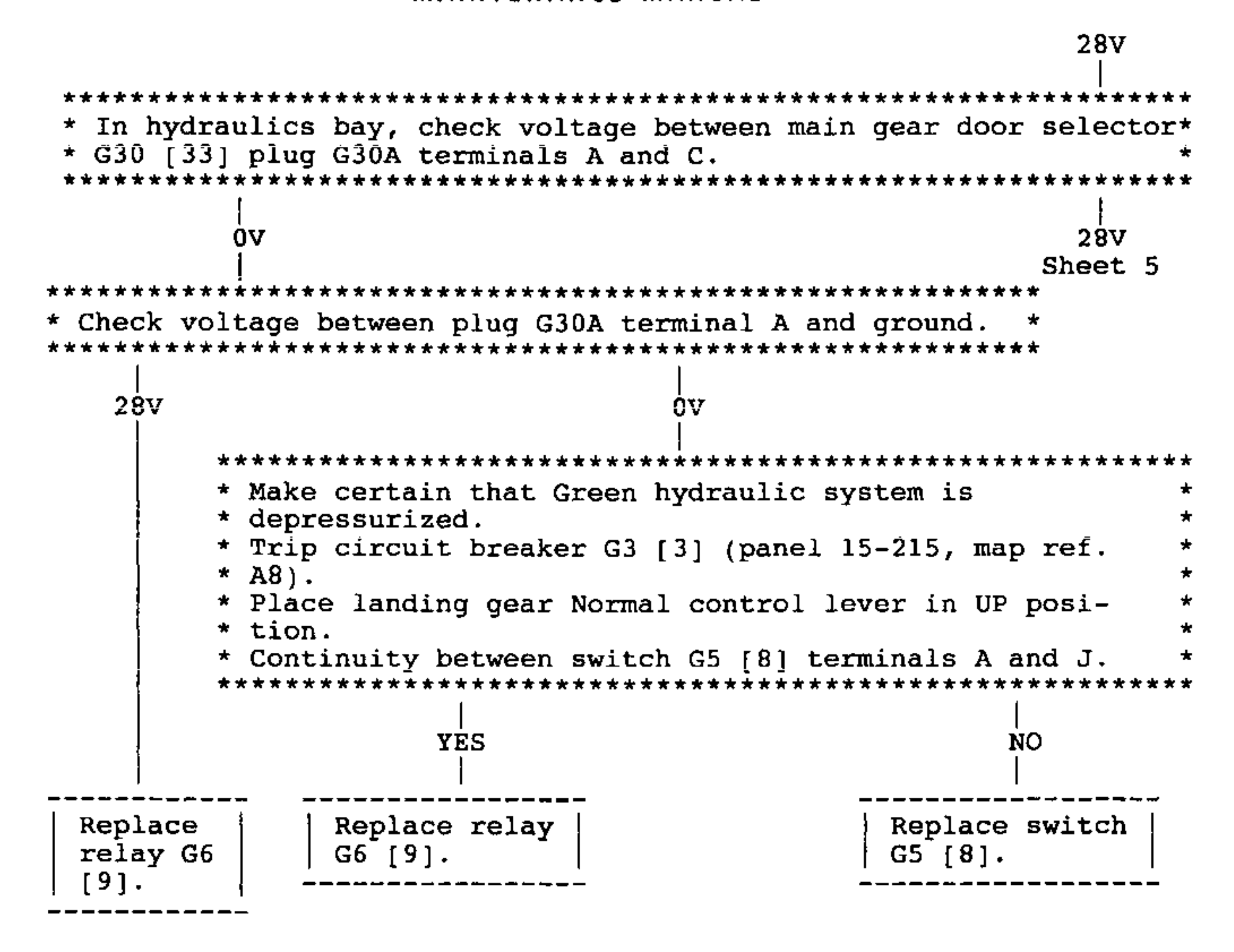


Chart 104 (Sheet 3 of 5)

0V

```
***********************************************************************
* Check circuit breaker G2 [2] (panel 15-215, map ref. A7).          *
***********************************************************************
```

OK → Replace switch G5 [8].

NOT OK → Replace circuit breaker G2 [2].

Chart 104 (Sheet 4 of 5)

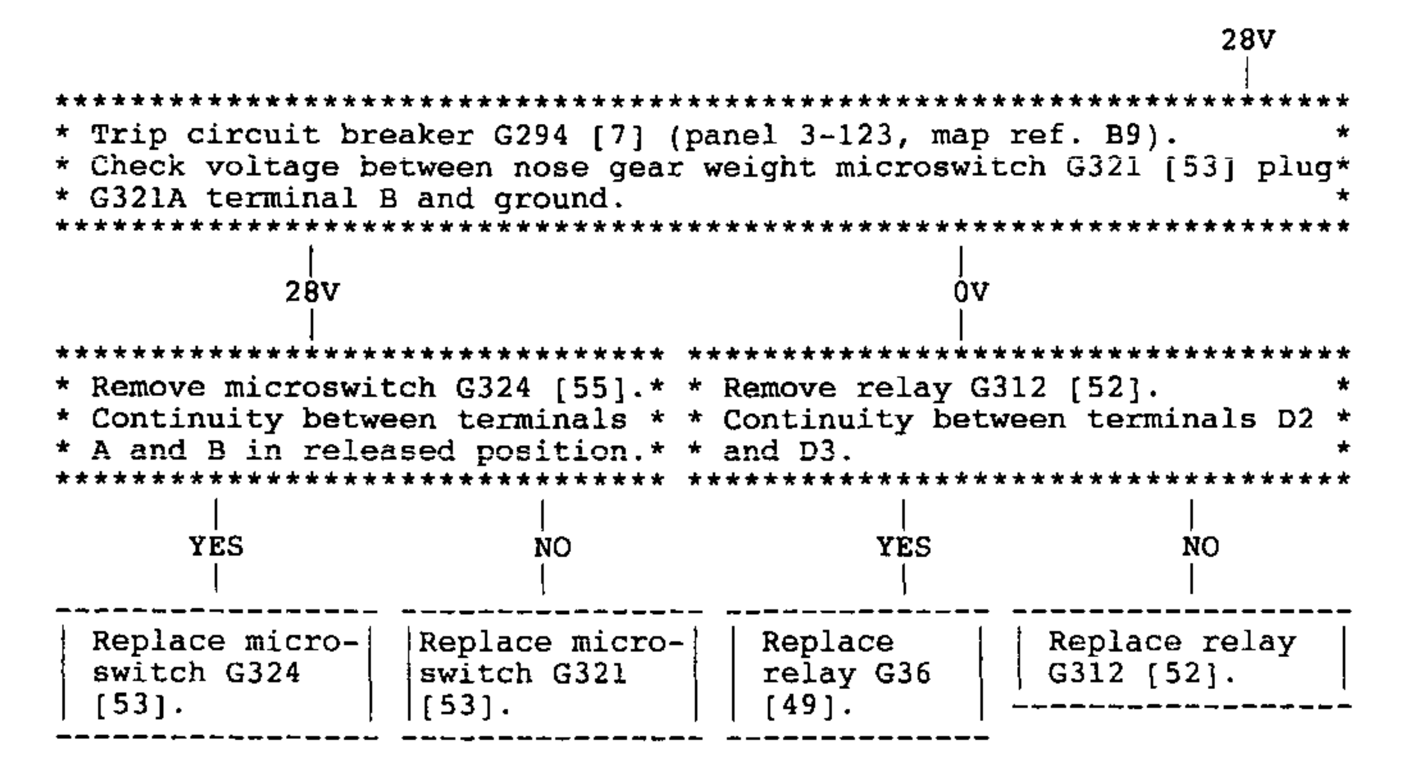


Chart 104 (Sheet 5 of 5)

RED WARNING LIGHTS CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

* Make certain that landing gear safety devices are in position.
* Make certain that Green hydraulic system is depressurized.
* Place landing gear Normal control lever in UP position.
* At switch G5 [8], continuity between plug G5A terminals A and C.

YES → Replace circuit breaker G2 [2] (panel 15-215, map ref. A7).

NO → Replace switch G5 [8].

Chart 105

RED WARNING LIGHT CORRESPONDING TO GREEN NOSE ARROW REMAINS OFF. ON FAULT ANNUNCIATOR : LH AND RH (NOSE DOORS) INDICATOR LIGHTS ARE ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

Open nose gear doors. (Ref. 32-00-00, Servicing). The doors open.

YES:
Replace nose gear door ground opening relay G34 [88].

NO:
Open doors using Emergency system (Ref. 32-32-00, Adjustment/Test). Continuity between nose gear and door safety electrovalve G32 [35] terminals A and C.

- YES: Replace nose gear door selector G29 [32].
- NO: Replace nose gear and door safety electro-valve G32 [35].

Chart 106

RED WARNING LIGHTS CORRESPONDING TO GREEN LH AND RH ARROWS REMAIN OFF. ON FAULT ANNUNCIATOR : LH AND RH (MAIN DOORS) INDICATOR LIGHTS ARE ON.	GROUND EQUIPMENT REQUIRED	
	DESCRIPTION	PART NO.
	MULTIMETER	-

Open main gear doors. (Ref. 32-00-00, Servicing).
The doors open.

YES → Replace main gear door ground opening relay G35 [89].

NO → In hydraulics bay, continuity between main gear and door safety electrovalve G31 [34] terminals A and C.

- YES → Replace main gear door selector G30 [33].
- NO → Replace main gear and door safety electro-valve G31 [34].

Chart 107

```
***************************************
* ON FAULT ANNUNCIATOR :              *
* RH OR LH (NOSE DOORS) INDICATOR     *
* LIGHT IS ON.                        *
***************************************

**********************************************************************
* Open nose gear doors. (Ref. 32-00-00, Servicing).                  *
* Both nose gear doors unlock.                                       *
**********************************************************************
            |                                      |
           YES                                     NO
            |                                      |
-----------------------------      -----------------------------------
| Replace faulty nose gear  |      | Replace faulty nose gear door   |
| door jack.                |      | uplock.                         |
| RH door jack ; [71]       |      | LH nose gear door :             |
| LH door jack ; [72].      |      | Fwd uplock ; [63].              |
-----------------------------      | Aft uplock ; [64].              |
                                   | RH nose gear door :             |
                                   | Fwd uplock ; [65].              |
                                   | Aft uplock ; [66].              |
                                   -----------------------------------
```

Chart 108

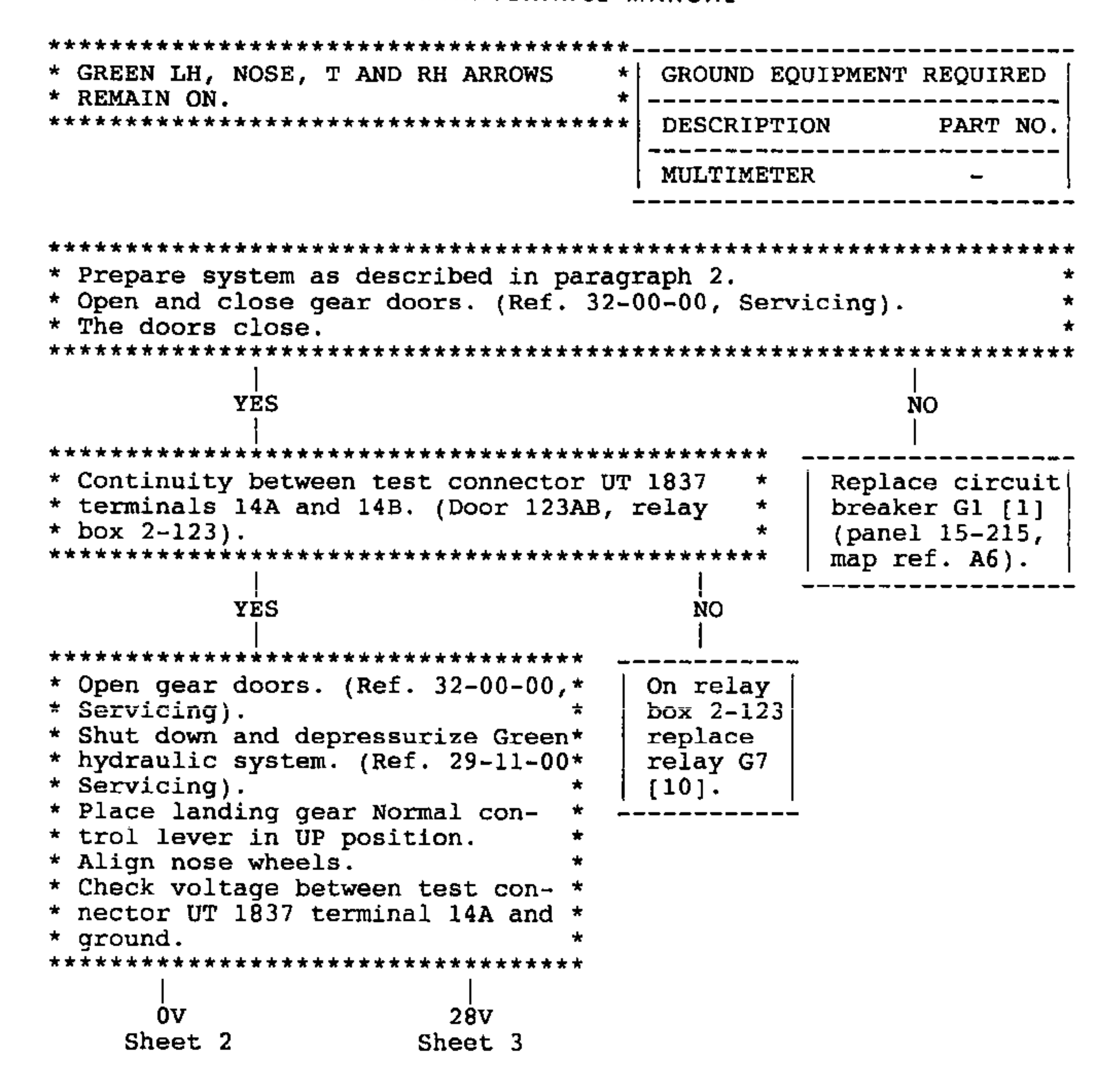


Chart 111 (Sheet 1 of 3)

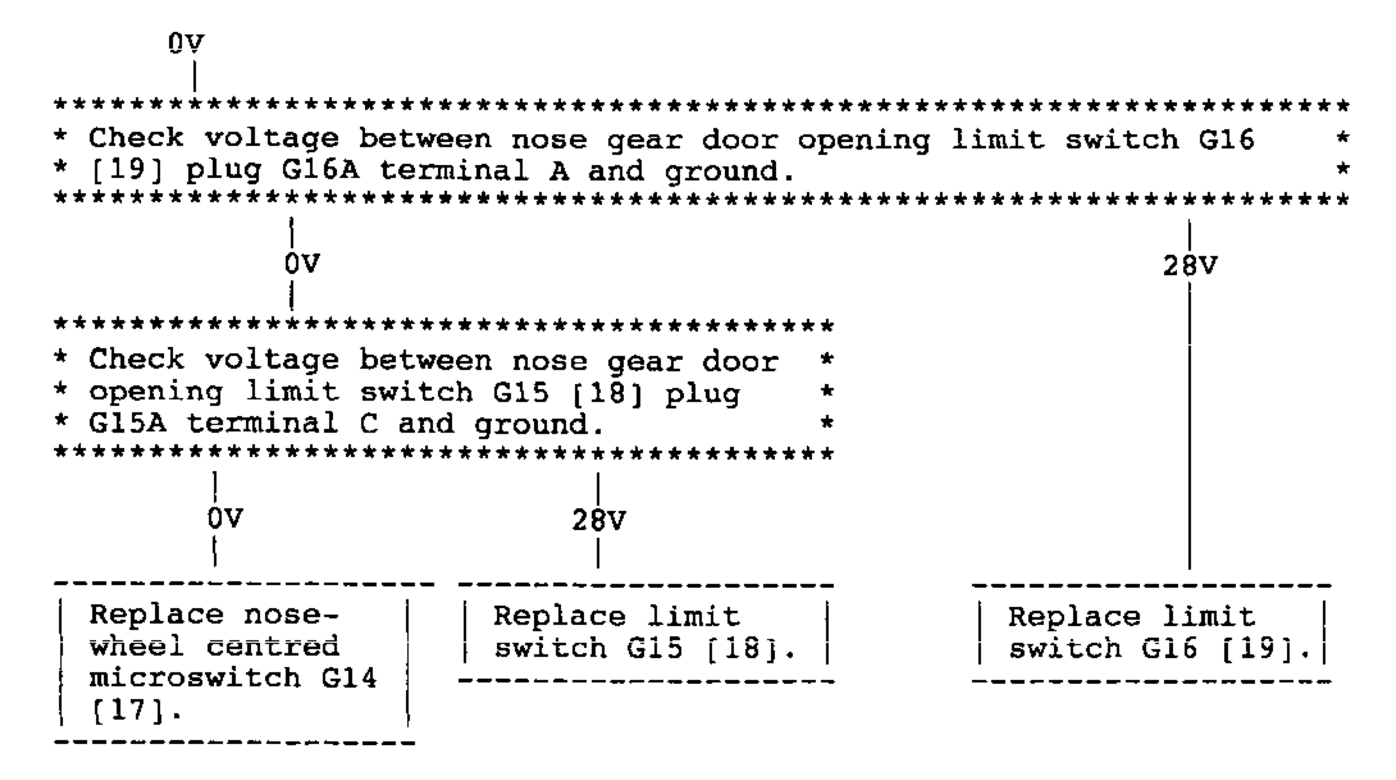


Chart 111 (Sheet 2 of 3)

28V

Shunt LH gear bogie beam aligned microswitch G18 [21] plug G18A terminals D and F.
Check voltage between RH gear bogie beam aligned microswitch G21 [24] plug G21A terminal D and ground.

- 0V → Check voltage between RH gear door opening limit switch 2G20-1 [23] plug 2G20-1A terminal F and ground.
  - 0V → Replace LH gear door opening limit switch 1G20-1 [22].
  - 28V → Replace RH gear door opening limit switch 2G20-1 [23].
- 28V → Remove RH gear bogie beam aligned microswitch G21 [24]. Continuity between terminals D and F in released position.
  - YES → Replace LH gear bogie beam aligned microswitch G18 [21].
  - NO → Replace RH gear bogie beam aligned microswitch G21 [24].

Chart 111 (Sheet 3 of 3)

```
**************************************
* GREEN LH, NOSE AND RH ARROWS REMAIN *
* ON.                                 *
* ON FAULT ANNUNCIATOR :              *
* LH AND RH (BOGIE BEAM) INDICATOR    *
* LIGHT IS ON.                        *
**************************************

********************************************************************
* Check pressure of pitch dampers concerned.  (Ref. 32-11-31,      *
* Inspection/Check).                                               *
********************************************************************
         |                                               |
         OK                                           NOT OK
         |                                               |
------------------                          -------------------------
| Replace the two |                         | Replace faulty bogie  |
| faulty pitch    |                         | beam aligned micro-   |
| dampers [80].   |                         | switch G18 [21] or    |
------------------                          |  G21 [24].            |
                                            -------------------------
```

Chart 113

GREEN NOSE ARROW REMAINS ON.
SEQUENCE INTERRUPTED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

* Continuity between nose gear selector G26 [29] terminals A and C.
  - YES:
    * Jack up the aircraft. (Ref. 07-11-00). Using ground power unit EMH398E check locking of nose gear telescopic drag strut.
      - OK: Replace nose gear selector G26 [29]
      - NOT OK: Replace nose gear telescopic drag strut [79].
  - NO: Replace nose gear selector G26 [29]

Chart 116

AMBER UPPER LOCKS INDICATOR LIGHT DOES NOT COME ON. SEQUENCE NOT INTERRUPTED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

Prepare system as described in paragraph 2.
Check voltage between test connector UT 1838 terminal 15B and ground. (Door 123AB, relay box 3-123).

- 0V → Replace switch G5 [8].
- 28V → Shunt RH gear downlocked microswitch G53 [36] plug G53A terminals E and F. Amber UPPER LOCKS indicator light is on.
  - YES → Replace microswitch G53 [36].
  - NO → Replace relay G77 [48].

Chart 117

AMBER UPPER LOCKS INDICATOR LIGHT REMAINS ON.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

- Open main gear doors. (Ref. 32-00-00, Servicing).
- Shut down and depressurize Green hydraulic system. (Ref. 29-11-00 Servicing).
- Trip circuit breaker G4 [4] (panel 15-215, map ref. A9).
- Manually lock nose and main gear uplocks.
- Shunt RH gear downlocked microswitch G53 [36] plug G53A terminals E and F.
- Place landing gear Normal control lever in NEUTRAL position.
- Reset circuit breaker G4.
- Amber UPPER LOCKS indicator light is on.

NO → Sheet 2

YES ↓

- Trip circuit breaker G4 [4].
- Continuity between nose gear uplocked microswitch G17 [20] terminals D and F.

YES → Replace microswitch G17[20].

NO → Continuity between LH gear uplocked microswitch G12 [15] terminals D and F.

- YES → Replace microswitch G12 [15].
- NO → Replace microswitch G13 [16].

All ↓

To unlock uplocks, open doors using Emergency system. (Ref. 32-32-00, Adjustment/Test).
Close doors using Green hydraulic system; landing gear Normal control lever in DOWN position.

Chart 118 (Sheet 1 of 2)

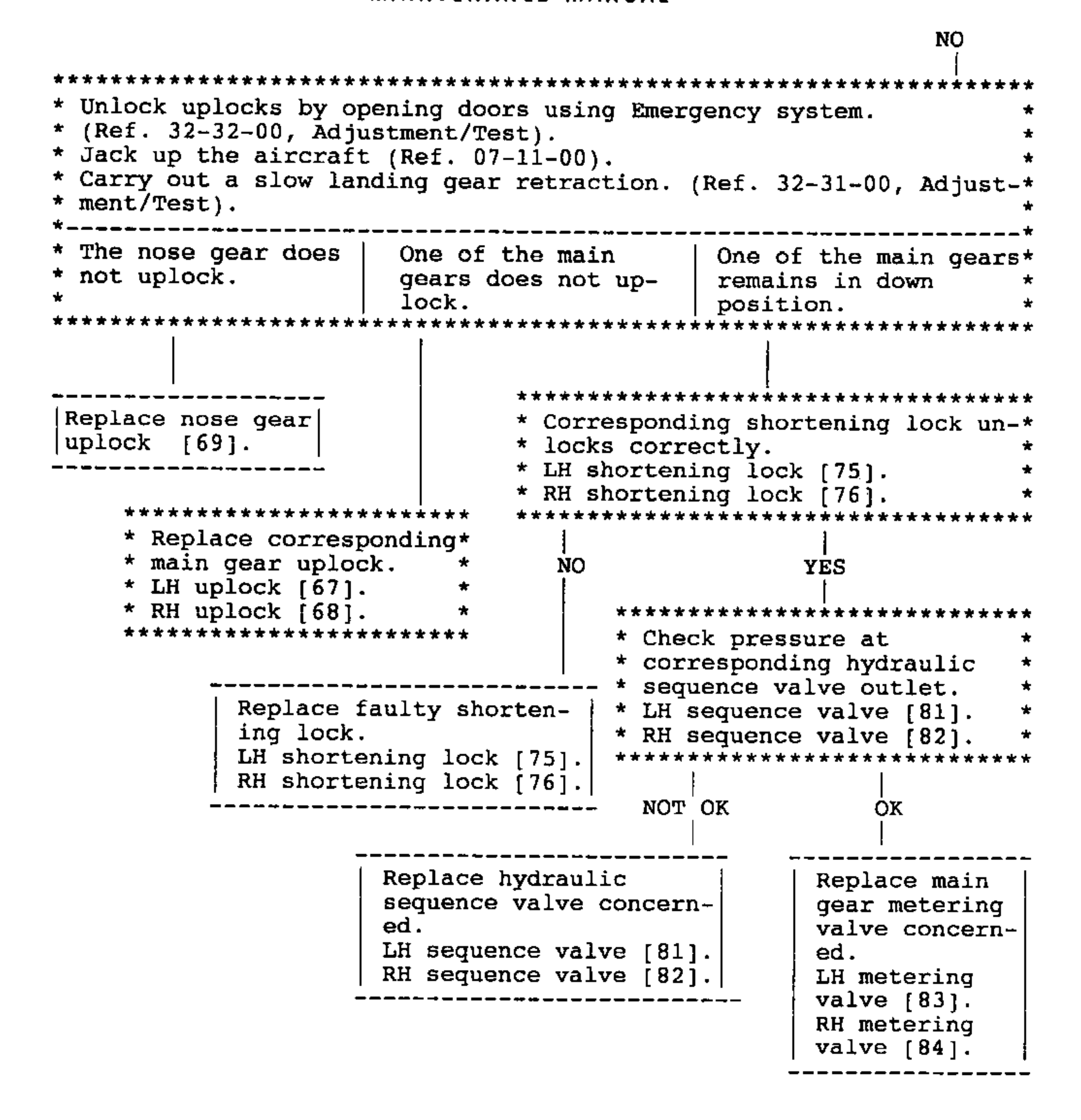


Chart 118 (Sheet 2 of 2)

* GREEN T ARROW REMAINS ON.
* SEQUENCE NOT INTERRUPTED.

GROUND EQUIPMENT REQUIRED

DESCRIPTION	PART NO.
MULTIMETER	-

* Disconnect tail gear selector G28 [31] plug G28A.
* Continuity between tail gear selector G28 terminals A and C.

NO → Replace tail gear selector G28 [31].

YES ↓

* Prepare system as described in paragraph 2.
* Open nose gear doors. (Ref. 32-00-00, Servicing).
* Shut down and depressurize Green hydraulic system. (Ref. 29-11-00 Servicing).
* Ground test connector UT 1837 terminal 14B (door 123AB, relay box 2-123).
* Make certain that nose wheels are centred.
* Place landing gear Normal control lever in UP position.
* Check voltage between tail gear selector G28 [31] plug G28A terminals A and C.

0V → Replace relay G7 [10]. Connect plug G28A.

28V → Replace relay G55 [38]. Connect plug G28A.

Chart 119

```
****************************************
* RED WARNING LIGHT CORRESPONDING TO   *
* GREEN T ARROW DOES NOT COME ON.      *
* SEQUENCE NOT INTERRUPTED.            *
****************************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

```
*********************************************************************
* Continuity between tail gear uplocked microswitch G56 [39]        *
* terminals A and B.                                                *
*********************************************************************
        |                                               |
       YES                                              NO
        |                                               |
----------------------                      ---------------------
|Replace microswitch |                      |Replace microswitch|
|G55 [38].           |                      |G56 [39].          |
----------------------                      ---------------------
```

Chart 120

RED WARNING LIGHT CORRESPONDING TO GREEN T ARROW REMAINS ON. SEQUENCE NOT INTERRUPTED.

GROUND EQUIPMENT REQUIRED

DESCRIPTION	PART NO.
MULTIMETER	-

Remove tail gear uplocked microswitch G56 [39]. Continuity between microswitch G56 terminals A and B in released position.

YES: Replace tail gear uplocked microswitch G56 [39].

NO: Replace tail gear actuating cylinder [74].

Chart 121

```
****************************************_____________________________
* RED WARNING LIGHTS CORRESPONDING TO *| GROUND EQUIPMENT REQUIRED |
* GREEN LH, NOSE AND RH ARROWS REMAIN *|---------------------------|
* ON.                                 *| DESCRIPTION       PART NO.|
****************************************|---------------------------|
                                        | MULTIMETER             -  |
                                        -----------------------------

**********************************************************************
* Prepare system as described in paragraph 2.                        *
* Manually lock nose and main gear uplocks.                          *
* Make certain that Green hydraulic system is depressurized.         *
* Place landing gear Normal control lever in UP position.            *
* Check voltage between test connector UT 1837 terminals 8C and 8D  *
* (door 123AB, relay box 2-123).                                     *
**********************************************************************
                 |                                                 |
                 0V                                               28V
                 |                                                 |
****************************************                           |
* Check voltage between test connector*                            |
* UT 1837 terminal 8C and ground.     *                            |
****************************************                           |
   |   |     ********************************************          |
   |   |     * Trip circuit breaker G2 [2] (panel 15-215 *         |
   0V  28V---* map ref. A7).                             *         |
   |         * Continuity between LH gear uplocked micro- *        |
   |         * switch G12 [15] terminals A and B.        *         |
   |         ********************************************          |
   |                   |                  |                        |
   |                  YES                 NO                       |
   |                   |                  |                        |
---------------  ---------------  ---------------  ----------------
| Replace     |  | Replace     |  | Replace     |  | Replace relay|
| microswitch |  | microswitch |  | microswitch |  | G8 [11].     |
| G17 [20].   |  | G13 [16].   |  | G12 [15].   |  ----------------
---------------  ---------------  ---------------

----------------------------------------------------------------------
| To unlock uplocks, open doors using Emergency system.              |
| (Ref. 32-32-00, Adjustment/Test).                                  |
| Close doors using Green hydraulic system, landing gear Normal      |
| control lever in DOWN position.                                    |
----------------------------------------------------------------------
```

Chart 122

```
****************************************
* RED WARNING LIGHT CORRESPONDING TO *
* GREEN NOSE ARROW REMAINS ON.         *
****************************************

*******************************************************************
* Visually check that nose gear doors are uplocked.               *
*-----------------------------------------------------------------*
* One door is | One door is closed | Both doors are| Both doors are*
* open.       | but not uplocked.  | open.         | uplocked.     *
*******************************************************************
       |              |                    |                 |
-----------------     |     -------------------------    Sheet 2
|Replace jack of|     |     | Replace nose gear door|
|door concerned.|     |     | selector G29 [32].    |
|LH jack [72].  |     |     -------------------------
|RH jack [73].  |     |
-----------------     |
       ****************************************
       * Check adjustment of door concerned  *
       * (Ref. 32-22-11, Adjustment/Test).   *
       ****************************************
              |                      |
              OK                  NOT OK
              |                      |
------------------          ---------------------
| Replace faulty |          | Adjust door.      |
| uplock.        |          | (Ref. 32-22-11,   |
| LH door :      |          | Adjustment/Test). |
| Fwd uplock [63].|         ---------------------
| Aft uplock [64].|
| RH door :      |
| Fwd uplock [65].|
| Aft uplock [66].|
------------------
```

Chart 123 (Sheet 1 of 2)

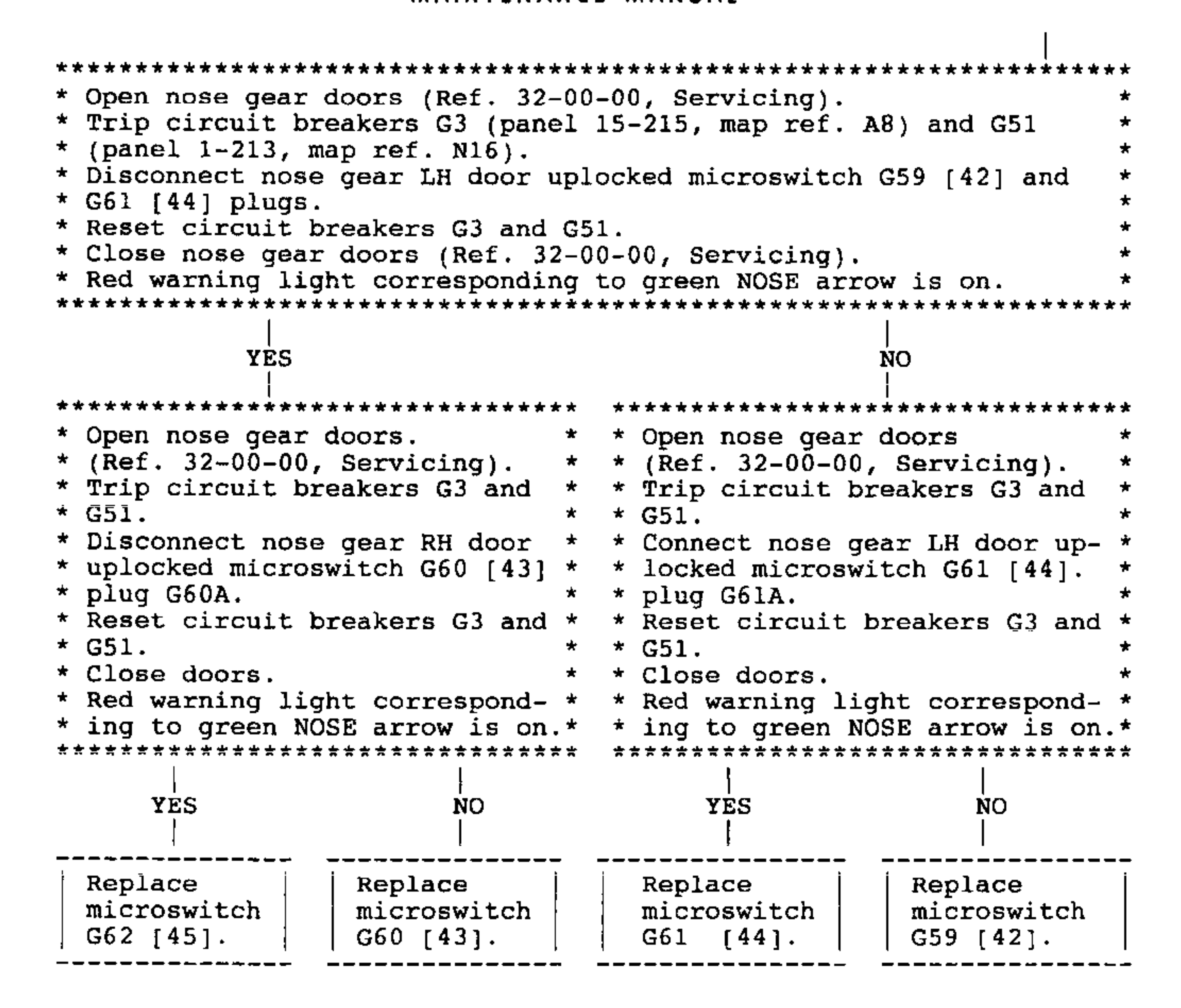


Chart 123 (Sheet 2 of 2)

```
****************************************
* RED WARNING LIGHT CORRESPONDING TO *
* GREEN LH OR RH ARROW REMAINS ON.   *
****************************************

**********************************************************************
* Open and close main gear doors (Ref. 32-00-00, Servicing).         *
* The main gear door concerned is :                                  *
*--------------------------------------------------------------------*
* Closed and uplocked.|       Open        |      Closed but not      *
*                     |                   |         uplocked.        *
**********************************************************************
        |                   |                     |
        |                   |                     |
-----------------------  ------------------       |
| Replace main gear   |  | Replace door   |       |
| door uplocked micro-|  | jack concerned.|       |
| switch concerned.   |  | LH jack [70].  |       |
| G57 [40] or         |  | RH jack [71].  |       |
| G58 [41].           |  ------------------       |
-----------------------                           |
                        ****************************************
                        * Check adjustment of door concerned.  *
                        * (Ref. 32-12-11, Adjustment/Test).    *
                        ****************************************
                              |                  |
                              OK              NOT OK
                              |                  |
                       -------------------  -------------------
                       | Replace uplock  |  |Adjust door.     |
                       | concerned.      |  |(Ref. 32-12-11,  |
                       | LH uplock [61]. |  |Adjustment/Test).|
                       | RH uplock [62]. |  -------------------
                       -------------------
```

Chart 125

RED WARNING LIGHTS CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN OFF. AMBER LH SHORT, RH SHORT AND UPPER LOCKS INDICATOR LIGHTS REMAIN OFF.	GROUND EQUIPMENT REQUIRED	
	DESCRIPTION	PART NO.
	MULTIMETER	-

* Prepare system as described in paragraph 2.
* Check voltage between test connector UT 1838 terminal 15A and ground. (Door 123AB, relay box 3-123).

0V → Replace circuit breaker G4 [4] (panel 15-215, map ref. A8)

28V → Replace switch G5 [8].

Chart 126

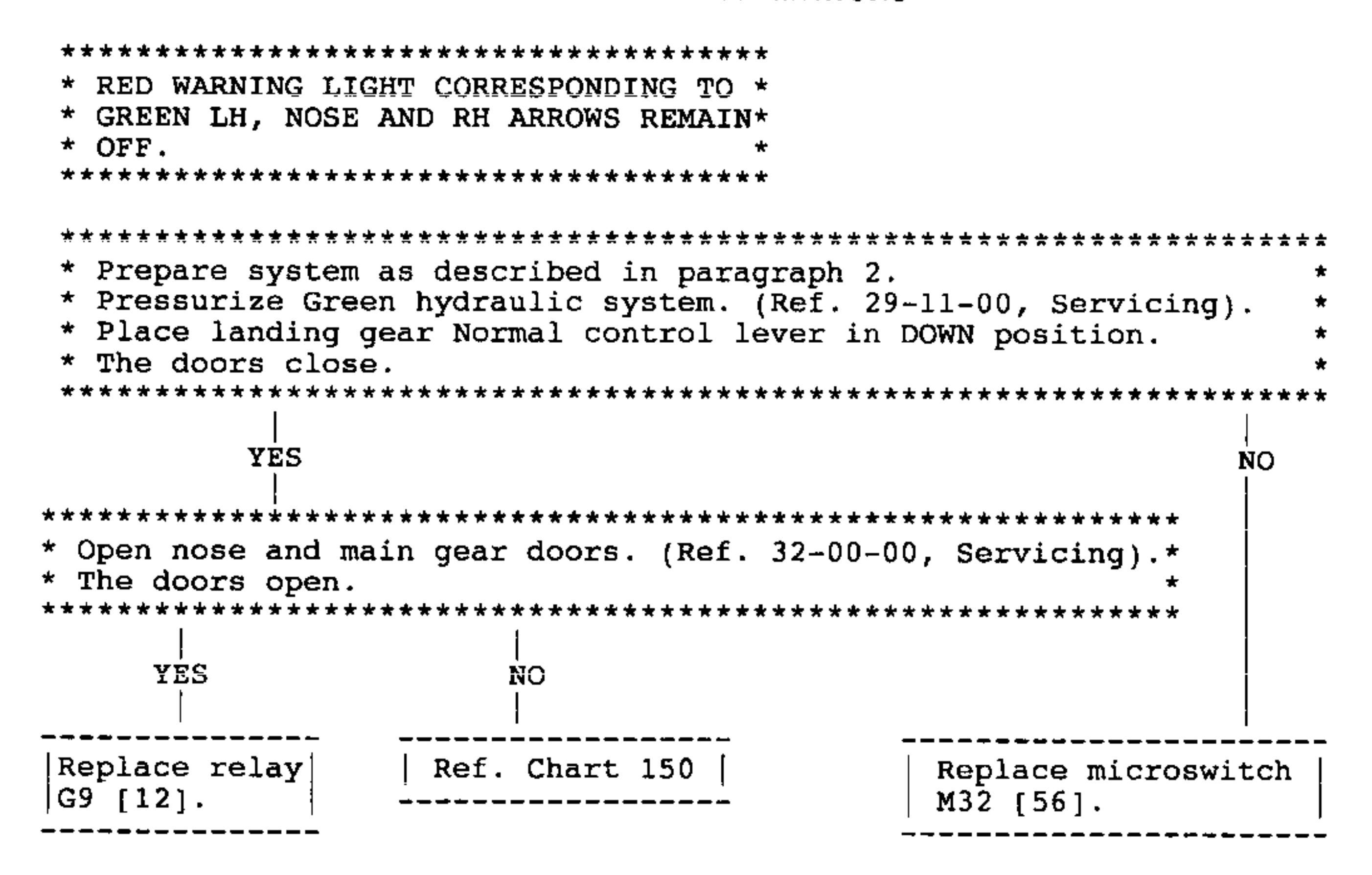

RED WARNING LIGHT CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN OFF.
Prepare system as described in paragraph 2.
Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).
Place landing gear Normal control lever in DOWN position.
The doors close.
YES
NO
Open nose and main gear doors. (Ref. 32-00-00, Servicing).
The doors open.
YES
NO
Replace relay G9 [12].
Ref. Chart 150
Replace microswitch M32 [56].

Chart 127

RED WARNING LIGHT CORRESPONDING TO GREEN NOSE ARROW REMAINS OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

- Open doors using Emergency system. (Ref. 32-32-00, Adjustment/Test).
- Prepare system as described in paragraph 2.
- Place landing gear Normal control lever in DOWN position.
- On nose gear leg, place door ground opening handle in 'open' position ; indicator plate showing red.
- In nose gear bay, check voltage between nose gear door selector G29 [32] plug G29A terminals A and C.

0V → Replace nose gear door ground opening relay G34 [88].

28V → Continuity between nose gear door selector G29 [32] terminals A and C.

- NO → Replace nose gear door selector G29 [32].
- YES → Continuity between nose gear and door safety electrovalve G32 [35] terminals A and C.
  - NO → Replace nose gear and door safety electrovalve G32 [35].
  - YES → Replace nose gear return and depressurization selector valve [85].

Then (all branches): On nose landing gear leg, place door ground opening control handle in 'close' position ; indicator plate showing white. Close doors using Green hydraulic system, landing gear Normal control lever in DOWN position.

Chart 128

RED WARNING LIGHTS CORRESPONDING TO GREEN LH AND RH ARROWS REMAIN OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

Prepare system as described in paragraph 2.
Place landing gear Normal control lever in DOWN position.
On LH main gear leg, place door ground opening handle in 'open' position ; indicator plate showing red.
In hydraulics bay, check voltage between main gear door selector G30 [33] plug G30A terminals A and C.

- 0V → Replace main gear door ground opening relay G35 [88].
- 28V → Continuity between main gear door selector G30 [33] terminals A and C.
  - NO → Replace main gear door selector G30 [33].
  - YES → Continuity between main gear and door safety electrovalve G31 [34] terminals A and C.
    - NO → Replace main gear and door safety electrovalve G31 [34].
    - YES → Replace main gear return and depressurization selector valve [86]

Chart 129

AMBER LH SHORT, RH SHORT AND UPPER LOCKS INDICATING LIGHTS REMAIN ON. GREEN LH, NOSE, T AND RH ARROWS REMAIN OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

Prepare system as described in paragraph 2.
Open nose and main gear doors (Ref. 32-00-00, Servicing).
One nose gear door remains uplocked.

- NO → One nose or main gear door is not fully open
  - NO → Place landing gear Normal control lever in DOWN position. Check voltage between test connector UT 1837 terminals 9A and 9B. (Door 123AB, relay box 2-123).
    - 0V → Sheet 2
    - 28V → Replace landing gear and tail gear lower control relay G10 [13].
  - YES → Replace door jack concerned
    - Main gear :
      - LH jack [70].
      - RH jack [71].
    - Nose gear :
      - LH jack [72].
      - RH jack [73].
- YES → Replace door uplock concerned
  - LH door :
    - Fwd uplock [63]
    - Aft uplock [64]
  - RH door :
    - Fwd uplock [65]
    - Aft uplock [66]

Chart 131 (Sheet 1 of 2)

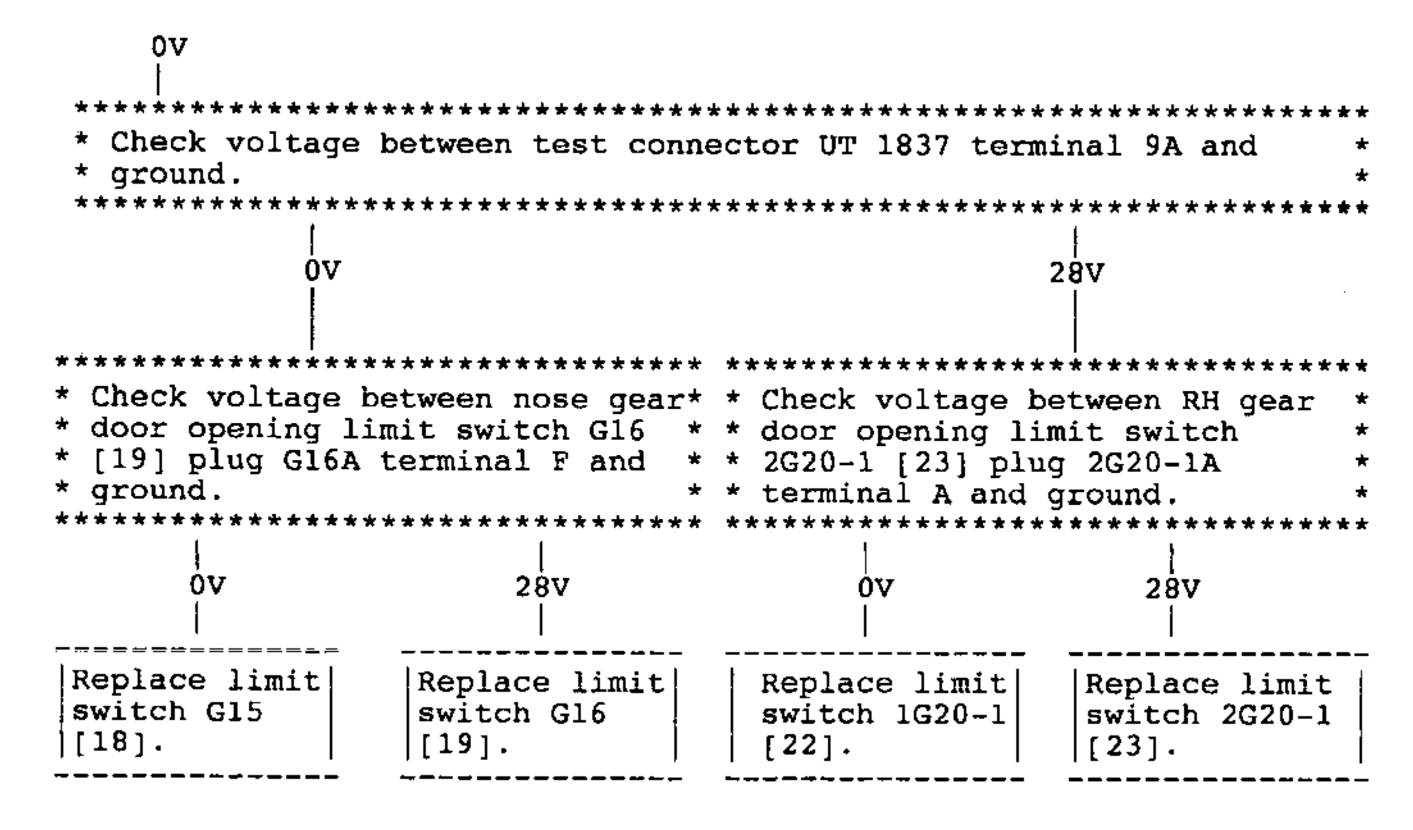


Chart 131 (Sheet 2 of 2)

```
****************************************
* AMBER UPPER LOCKS INDICATOR LIGHT    *
* REMAINS ON.                          *
* GREEN NOSE ARROW REMAINS OFF.        *
****************************************

*********************************************************************
* Landing gear extension was possible using Emergency system.       *
*********************************************************************
         |                                                    |
        YES                                                   NO
         |                                                    |
---------------------                              ---------------------
| Replace nose gear |                              | Replace nose gear  |
| selector G26 [29] |                              | uplock [69].       |
---------------------                              ---------------------
```

Chart 133

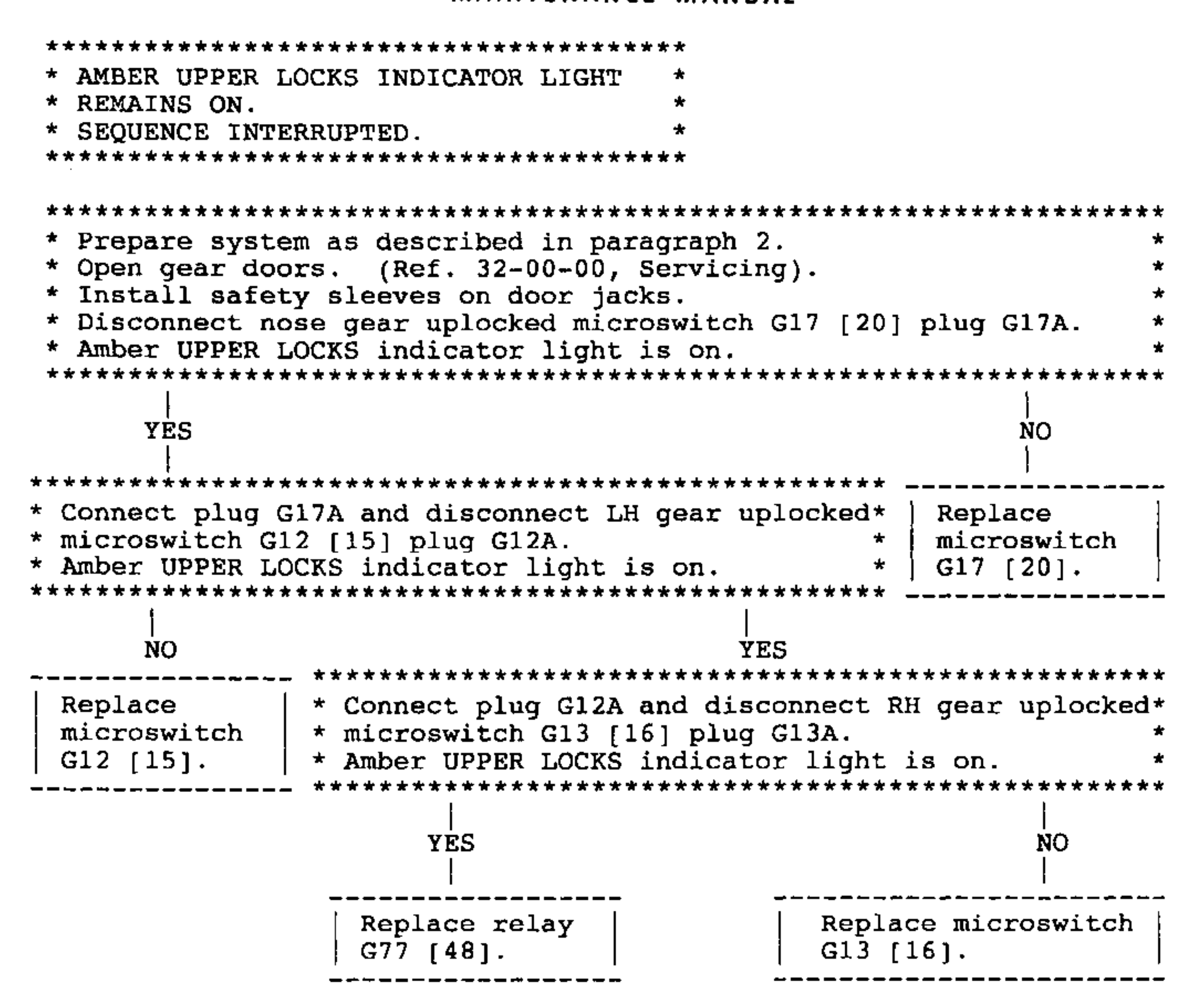

AMBER UPPER LOCKS INDICATOR LIGHT
REMAINS ON.
SEQUENCE INTERRUPTED.
Prepare system as described in paragraph 2.
Open gear doors. (Ref. 32-00-00, Servicing).
Install safety sleeves on door jacks.
Disconnect nose gear uplocked microswitch G17 [20] plug G17A.
Amber UPPER LOCKS indicator light is on.
YES
NO
Connect plug G17A and disconnect LH gear uplocked microswitch G12 [15] plug G12A.
Amber UPPER LOCKS indicator light is on.
Replace microswitch G17 [20].
NO
YES
Replace microswitch G12 [15].
Connect plug G12A and disconnect RH gear uplocked microswitch G13 [16] plug G13A.
Amber UPPER LOCKS indicator light is on.
YES
NO
Replace relay G77 [48].
Replace microswitch G13 [16].

Chart 134

* RED WARNING LIGHT CORRESPONDING TO GREEN T ARROW REMAINS OFF.
* SEQUENCE NOT INTERRUPTED.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

* Tail landing gear is downlocked.

NO:

* Open gear doors using Emergency system (Ref. 32-32-00, Adjustment/Test).
* Continuity between tail gear Selector G28 [31] terminals F and D.
  - NO: Replace selector G28 [32].
  - YES: Replace relay G10 [13].

YES:

* Continuity between tail gear uplocked microswitch G56 [39] terminals A and B.
  - NO: Replace microswitch G56 [39].
  - YES: Replace microswitch G55 [38].

Chart 137

```
*******************************************
* GREEN T ARROW REMAINS OFF.              *
* SEQUENCE NOT INTERRUPTED.               *
*******************************************

*******************************************************************
* Visually check that tail landing gear is downlocked.           *
*******************************************************************
      |                                            |
      NO                                          YES
      |                                            |
---------------------                  --------------------------------
| Replace tail gear |                  | Replace tail gear downlocked |
| actuating cylinder|                  | microswitch G55 [38].        |
| [74].             |                  --------------------------------
---------------------
```

Chart 141

```
***************************************
* AMBER LH SHORT OR RH SHORT INDI-    *
* CATOR LIGHT REMAINS ON.             *
***************************************

**********************************************************************
* Both main gear shortening locks are locked.                        *
* Length locked : 0 mm (0 in.).                                      *
* Length unlocked : 15 mm (0.590 in.).                               *
**********************************************************************
          |                                               |
         YES                                              NO
          |                                               |
-------------------------------         ----------------------------
| Replace faulty shortening   |         | Replace faulty shortening|
| lock microswitch.           |         | lock.                    |
| LH ; G63 [46], RH; G64 [47].|         | LH ; [75], RH ; [76].    |
-------------------------------         ----------------------------
```

Chart 142

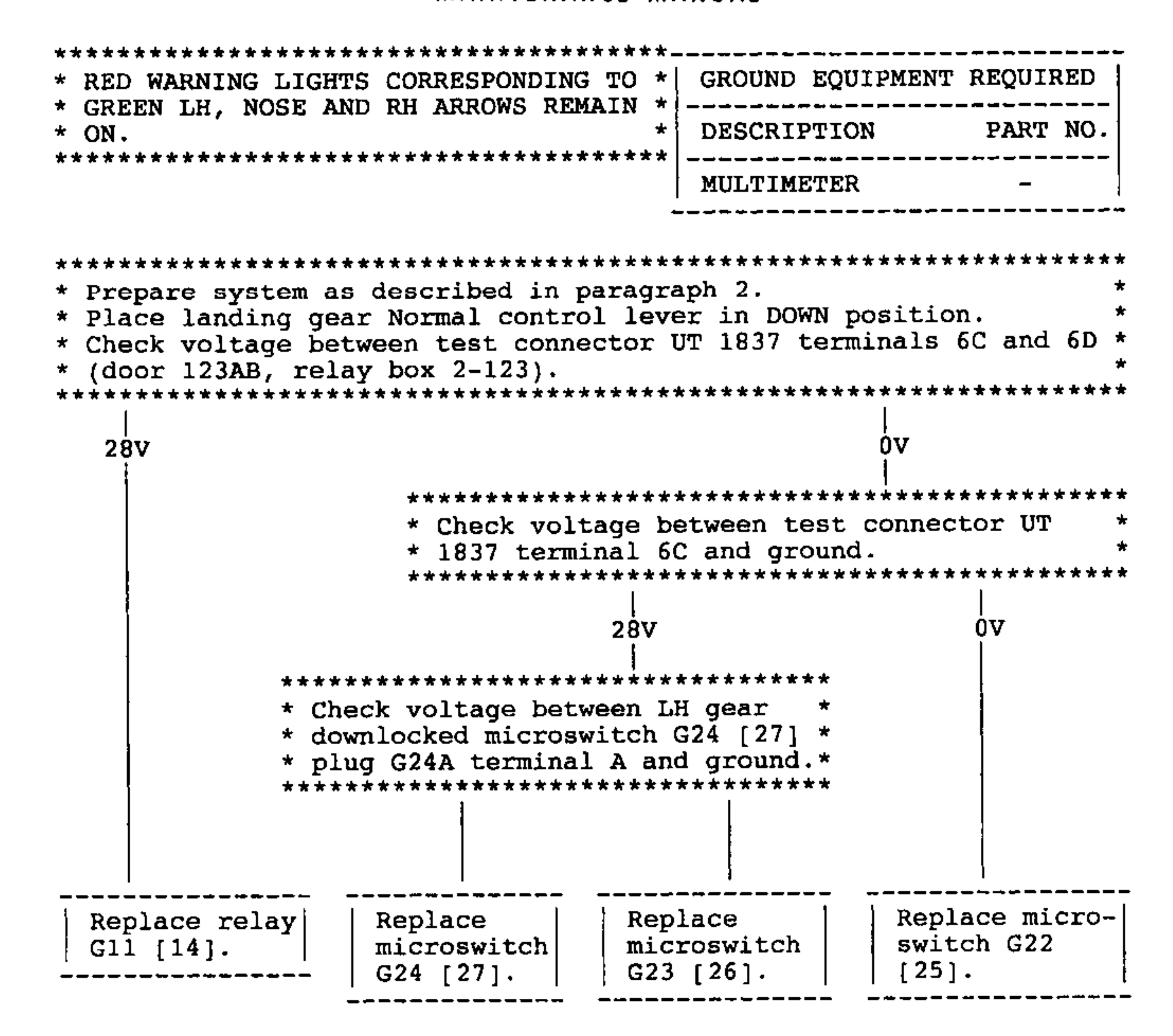

RED WARNING LIGHTS CORRESPONDING TO GREEN LH, NOSE AND RH ARROWS REMAIN ON.
GROUND EQUIPMENT REQUIRED
DESCRIPTION
PART NO.
MULTIMETER
-
Prepare system as described in paragraph 2.
Place landing gear Normal control lever in DOWN position.
Check voltage between test connector UT 1837 terminals 6C and 6D (door 123AB, relay box 2-123).
28V
0V
Check voltage between test connector UT 1837 terminal 6C and ground.
28V
0V
Check voltage between LH gear downlocked microswitch G24 [27] plug G24A terminal A and ground.
Replace relay G11 [14].
Replace microswitch G24 [27].
Replace microswitch G23 [26].
Replace micro-switch G22 [25].

Chart 143

MAIN AND NOSE LANDING GEAR DOOR GROUND OPENING FAILURE.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

* Prepare system as described in paragraph 2.
* Make certain that visor is not uplocked.
* Place landing gear Normal control lever in DOWN position.
* Check voltage between test connector UT 1837 terminals 12A and 12B (door 123AB, relay box 2-123).

0V → Check voltage between test connector UT 1837 terminal 12A and ground.

- **28V →** Shunt nose gear weight micro-switch G321 [52] plug G321A terminals A and C. Check voltage between test connector UT 1837 terminals 12A and 12B.
  - **28V →** Replace micro-switch G321 [53].
  - **0V →** Replace diode G37 [50].
- **0V →** Sheet 2

28V → In hydraulics bay, check voltage between main gear and door safety electrovalve G31 [34] plug G31A terminal A and ground

- **28V →** Replace relay G36 [49].
- **0V →** Place landing gear normal control lever in UP position. Check voltage between main gear and door safety electrovalve G31 [34] plug G31A terminal A and ground.
  - **28V →** Replace micro-switch M32 [56].
  - **0V →** Replace relay X139 [57].

Chart 150 (Sheet 1 of 2)

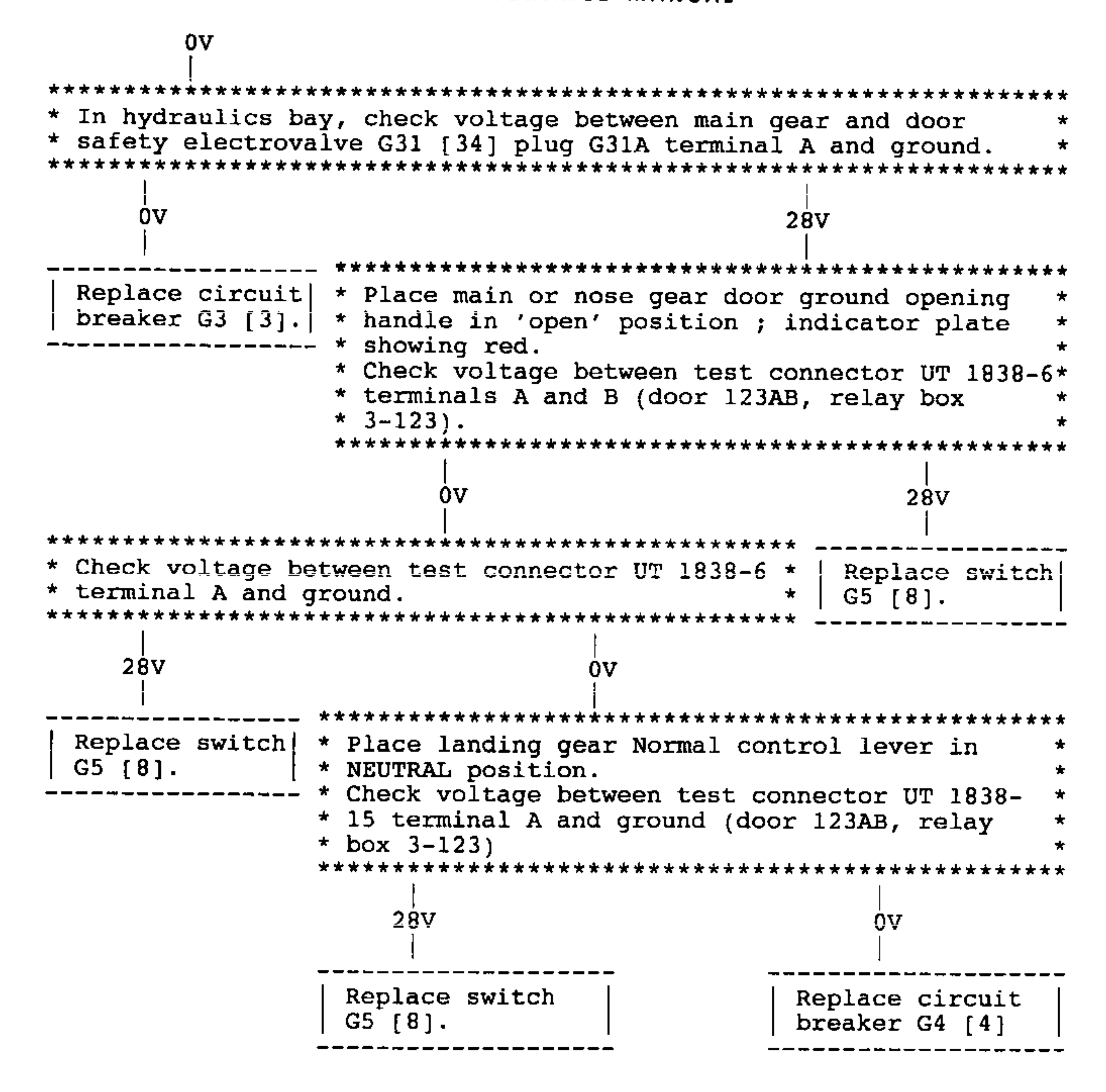


Chart 150 (Sheet 2 of 2)

NOSE GEAR DOOR GROUND OPENING FAILURE.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

Carry out a main gear door ground opening (Ref. 32-00-00, Servicing).
The doors open.

- NO: Ref. Chart 150
- YES: Check voltage between test connector UT 1838 terminals 6B and 6C (door 123AB, relay box 3-123).
  - 0V: Replace micro-switch G33 [87]
  - 28V: Open doors using Emergency system (Ref. 32-32-00, Adjustment/Test). In nose gear bay, check voltage between nose gear door selector G29 [32] plug G29A terminals A and C.
    - 28V: Replace selector G29 [32].
    - 0V: Replace relay G34 [88].

Chart 151

MAIN GEAR DOOR GROUND OPENING FAILURE.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	-

Open nose gear doors (Ref. 32-00-00, Servicing).
The doors open.

- NO: Ref. Chart 150
- YES: Check voltage between test connector UT 1838 terminals 6A and 6B (door 123 AB, relay box 3-123).
  - 0V: Replace micro-switch G25 [28].
  - 28V: In hydraulics bay, check voltage between main gear door selector G30 [33] plug G30A terminals A and C.
    - 28V: Replace selector G30 [33].
    - 0V: Replace relay G35 [89].

Chart 152

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[1] Circuit breaker		15-215	G1	Map Ref. A6	24-50-00 R/I	32-31-01
[2] Circuit breaker		15-215	G2	Map Ref. A7	24-50-00 R/I	32-31-01
[3] Circuit breaker		15-215	G3	Map Ref. A8	24-50-00 R/I	32-31-01
[4] Circuit breaker		15-215	G4	Map Ref. A9	24-50-00 R/I	32-31-01
[5] Circuit breaker		1-213	G51	Map Ref. N16	24-50-00 R/I	32-31-01
[6] Circuit breaker		1-213	G292	Map Ref. M17	24-50-00 R/I	32-31-01
[7] Circuit breaker		3-213	G294	Map Ref. B9	24-50-00 R/I	32-31-01
[8] Landing gear normal control switch		10-211	G5	First Officer's instrument panel	32-31-91 R/I	32-31-01
[9] Landing gear doors open control relay	123AB	2-123	G6	Fwd rack, under floor	32-00-00 R/I	32-31-01
[10] Landing gear and tail gear raise con-trol relay	123AB	2-123	G7	Fwd rack, under floor	32-00-00 R/I	32-31-01
[11] Landing gear doors closed control relay	123AB	2-123	G8	Fwd rack, under floor	32-00-00 R/I	32-31-01
[12] Landing gear doors open control relay	123AB	2-123	G9	Fwd rack, under floor	32-00-00 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[13] Landing gear and tail gear lower control relay	123AB	2-123	G10	Fwd rack, under floor	32-00-00 R/I	32-31-01
[14] Landing gear doors closed control relay	123AB	2-123	G11	Fwd rack, under floor	32-00-00 R/I	32-31-01
[15] LH gear uplocked micro-switch	731	571	G12	On LH main gear up-lock	32-31-15 R/I	32-31-01
[16] RH gear uplocked micro-switch	741	671	G13	On RH main gear up-lock	32-31-15 R/I	32-31-01
[17] Nosewheel centred micro-switch		715	G14	On Steer-ing jack	32-31-94 R/I	32-31-01
[18] Nose gear door opening limit switch	711	127	G15		32-31-95 R/I	32-31-01
[19] Nose gear door opening limit switch	712	128	G16		32-31-95 R/I	32-31-01
[20] Nose gear uplocked micro-switch	711	127	G17	On nose gear up-lock	32-31-67 R/I	32-31-01
[21] LH gear bogie beam aligned micro-switch		733	G18	On LH main gear fwd pitch dam-per	32-31-92 R/I	32-31-01
[22] LH gear door opening limit switch		731	1G20-1	On LH main gear door jack	32-31-14 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[23] RH gear door opening limit switch		741	2G20-1	On RH main gear door jack	32-31-14 R/I	32-31-01
[24] RH gear bogie beam aligned micro-switch		743	G21	On RH main gear fwd pitch damper	32-31-92 R/I	32-31-01
[25] Nose gear downlocked microswitch		715	G22	On nose gear drag strut	32-31-71 R/I	32-31-01
[26] RH gear downlocked microswitch		743	G23	On RH main gear brace strut	32-31-28 R/I	32-31-01
[27] LH gear downlocked microswitch		733	G24	On LH main gear brace strut	32-31-28 R/I	32-31-01
[28] Door ground opening microswitch		733	G25	On LH main gear leg	32-31-23 R/I	32-31-01
[29] Nose gear selector	711	127	G26		32-31-65 R/I	32-31-01
[30] Main gear selector	151DB	152	G27		32-31-11 R/I	32-31-01
[31] Tail gear selector		313	G28		32-31-81 R/I	32-31-01
[32] Nose gear door selector	711	127	G29		32-31-61 R/I	32-31-01
[33] Main gear door selector	151DB	151	G30		32-31-11 R/I	32-31-01
[34] Main gear and door safety electrovalve	151DB	152	G31		32-31-32 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
[35] Nose gear and door safety electrovalve	711	127	G32		32-31-76 R/I	32-31-01
[36] RH gear downlocked microswitch		743	G53	On RH main gear brace strut	32-31-28 R/I	32-31-01
[37] LH gear downlocked microswitch		733	G54	On LH main gear brace strut	32-31-28 R/I	32-31-01
[38] Tail gear downlocked microswitch		752	G55	On tail gear actuating cylinder	32-31-82 R/I	32-31-01
[39] Tail gear uplocked micro-switch		752	G56	On tail gear actuating cylinder	32-31-82 R/I	32-31-01
[40] LH main gear door up-locked micro-switch	731	571	G57	On LH main gear door uplock	32-31-12 R/I	32-31-01
[41] RH main gear door up-locked micro-switch	741	671	G58	On RH main gear door uplock	32-31-12 R/I	32-31-01
[42] Nose gear LH door uplock-ed microswitch	711	127	G59	On door uplock	32-31-62 R/I	32-31-01
[43] Nose gear RH door uplock-ed microswitch	712	128	G60	On door uplock	32-31-62 R/I	32-31-01
[44] Nose gear LH door uplock-ed microswitch	711	127	G61	On door uplock	32-31-62 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[45] Nose gear RH door uplock-ed microswitch	712	128	G62	On door uplock	32-31-62 R/I	32-31-01
[46] LH shortening lock microswitch	732AB	733	G63	On LH main gear shortening lock	32-31-27 R/I	32-31-01
[47] RH shortening lock microswitch	742AB	743	G64	On RH main gear shortening lock	32-31-27 R/I	32-31-01
[48] UPPER LOCKS transfer relay	123AB	3-123	G77	Fwd rack, under floor	32-00-00 R/I	32-62-01
[49] Safety electrovalve holding relay	123AB	2-123	G36	Fwd rack, under floor	32-00-00 R/I	32-31-01
[50] Diode	123AB	2-123	G37	Fwd rack, under floor	32-00-00 R/I	32-31-01
[51] LH landing gear weight relay	123AB	2-123	G300	Fwd rack, under floor	32-00-00 R/I	32-31-01
[52] RH landing gear weight relay	123AB	3-123	G312	Fwd rack, under floor	32-00-00 R/I	32-31-01
[53] Nose gear weight micro-switch		715	G321	On nose gear torque link	32-31-96 R/I	32-31-01
[54] LH gear weight micro-switch		733	G322	On LH main gear leg	32-31-93 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[55] RH gear weight micro-switch		743	G324	On RH main gear leg	32-31-93 R/I	32-31-01
[56] Visor uplock micro-switch	113BB	113	M32			32-31-01
[57] Static inverter relay		19-215	X139		32-00-00 R/I	32-31-01
[58] LH main gear shock absorber					32-11-27 R/I	
[59] RH main gear shock absorber					32-11-27 R/I	
[60] Nose gear shock absorber					32-21-24 R/I	
[61] LH main gear door uplock	731	571	0408		32-31-12 R/I	
[62] RH main gear door uplock	741	671	0409		32-31-12 R/I	
[63] Nose gear LH door fwd uplock	711	127	3506		32-31-62 R/I	
[64] Nose gear LH door aft uplock	711	127	3508		32-31-62 R/I	
[65] Nose gear RH door fwd uplock	712	128	3507		32-31-62 R/I	

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[66] Nose gear RH door aft uplock	712	128	3509		32-31-62 R/I	
[67] LH main gear uplock	731	571	3406		32-31-15 R/I	
[68] RH main gear uplock	743	671	3407		32-31-15 R/I	
[69] Nose gear uplock	711	127	3504		32-31-67 R/I	
[70] LH main gear door jack	731	731	3404		32-31-14 R/I	
[71] RH main gear door jack	741	741	3405		32-31-14 R/I	
[72] Nose gear LH door jack	711	127	3502		32-31-64 R/I	
[73] Nose gear RH door jack	712	128	3503		32-31-64 R/I	
[74] Tail gear actuating cylinder		313	1318		32-31-82 R/I	
[75] LH shortening lock	732AB	733	3410	On LH main gear leg	32-31-27 R/I	
[76] RH shortening lock	742AB	743	3411	On RH main gear leg	32-31-27 R/I	
[77] RH telescopic brace strut		743	3413		32-31-28 R/I	
[78] LH telescopic brace strut		733	3414		32-31-28 R/I	

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[79] Nose gear telescopic drag strut		715	3513		32-31-71 R/I	
[80] Pitch damper		733 743			32-11-31 R/I	
[81] LH main gear hydraulic sequence valve		733	4104	On LH main gear leg	32-31-26 R/I	
[82] RH main gear hydraulic sequence valve		743	4105	On RH main gear leg	32-31-26 R/I	
[83] LH main gear metering valve		572	4010		32-31-17 R/I	
[84] RH main gear metering valve		672	4011		32-31-17 R/I	
[85] Nose gear return and de-pressurization selector valve	711	127	4014		32-32-13 R/I	
[86] Main gear return and de-pressurization selector valve	151DB	152	4012		32-32-31 R/I	
[87] Nose gear door ground opening micro-switch		715	G33	On nose gear leg		32-31-01
[88] Nose gear door ground opening relay	123AB	2-123	G34		32-00-00 R/I	32-31-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF.	
					MAINT. TOPIC	WIRING DIAGRAM
[89] Main gear door ground opening relay	123AB	2-123	G35		32-00-00 R/I	32-31-01

Component Identification
Table 101

NORMAL EXTENSION AND RETRACTION - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPONDS WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE. MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Make certain that landing gear extends and retracts correctly and that each phase is correctly indicated.

B. Check that devices preventing landing gear retraction with aircraft on its wheels operate correctly.

C. Make certain that the supersonic flight landing gear extension interdiction operates correctly.

D. Check that landing gear door ground opening mechanisms operate correctly.

2. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH UC WEIGHT SW "A" SYS SUP	1-213	G 292	M17
UC POSN IND		G 51	N16
PLTS LT TEST SUP	15-215	L1001	E14
3CM STN LH LT TEST SUP 2	15-216	L1004	C13

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Gear Position Indicating Unit

(1) On First Officer's instrument panel, Green LH NOSE, T and RH arrows on gears position indicating unit are illuminated.

(2) On First Officer's RH side panel place and hold D/B LIGHT switch in TEST position.

(a) On gears position indicating unit amber UPPER LOCKS, LH SHORT and RH SHORT lights and the four red warning lights illuminate.

(3) Release D/B LIGHT switch.

(a) Amber UPPER LOCKS, LH SHORT, RH SHORT lights and the four red warning lights extinguish.

NOTE : Green LH, NOSE, T and RH arrows remain on.

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00), Servicing).

3. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack with Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device-Pyramid Adapter-LH	D921485000
Balancing Device-Pyramid Adapter-RH	D921485001
Pyramid Adapter-Lifting-LH	D924008000
Pyramid Adapter-Lifting-RH	D924008001
Jacking Pad-Nose	D925370000
Safety Stay	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console check that landing gear Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Make certain that visor is not uplocked.

(7) Position safety barriers.

(8) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(9) Connect hydraulic ground power unit to Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	B 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

C. Landing Gear Retraction Manoeuvre

(1) Make certain that visor is not uplocked.

<u>NOTE</u> : With landing gear downlocked and landing gear Normal control lever in NEUTRAL position : On First Officer's instrument panel, green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(2) Remove landing gear and shortening mechanism safety devices.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

<u>WARNING</u> : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Nose gear and main gear doors open.

(a1) The red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(b) Landing gear retraction.

(b1) Gears unlock.

- Green LH, NOSE, T and RH arrows extinguish.

(b2) Landing gears retract.

- Red warning light corresponding to green T arrow illuminates.
- Amber UPPER LOCKS light illuminates.

(b3) Gears uplock.

- Red warning light corresponding to green T arrow extinguishes.
- Amber UPPER LOCKS light extinguishes.

(c) Main and nose gear doors uplock.

(c1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(5) On First Officer's instrument panel, place landing

gear Normal control lever in NEUTRAL position.

(a) All lights are extinguished on gears position indicating unit.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Landing Gear Extension Manoeuvre

(1) Make certain that visor is not uplocked.

NOTE : With landing gear retracted and landing gear Normal control lever in NEUTRAL position, all lights on gears position indicating unit are extinguished.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On First Officer's instrument panel, amber LH SHORT, UPPER LOCKS and RH SHORT lights on gears position indicating unit illuminate.

(b) Main and nose gear doors open.

(b1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(c) Landing gear extension.

(c1) Gears unlock.

- Red warning light corresponding to green T arrows comes on;
- Amber UPPER LOCKS light extinguishes.

(c2) Gears downlock.

- Red warning light corresponding to green T arrow extinguishes.
- Green T then NOSE arrows come on.
- Amber LH SHORT and RH SHORT lights go off, green LH and RH arrows come on.

(d) Gear doors uplock.

(d1) Red warning lights corresponding to green LH, NOSE and RH arrows go off.

(4) Place landing gear Normal control lever in NEUTRAL position.

(a) Green LH, NOSE, T and RH arrows remain on.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Install landing gear and shortening mechanism safety devices.

E. Landing Gear Door Ground Manoeuvre Test

NOTE : This test can be carried out with aircraft on its wheels or on jacks.

WARNING : BEFORE OPENING OR CLOSING MAIN AND NOSE GEAR DOORS CHECK THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(1) Make certain that visor is not uplocked.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Pressurize Green hydraulic system (29-11-00, Servicing).

(4) On First Officer's instrument panel, make certain that green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(5) Open doors.

(a) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(b) On nose and LH main landing gear leg, remove locking cap and place handles in doors open position, indicator plate showing red.

(c) Main and nose landing gear doors open.

(c1) On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE and RH arrows illuminate.

(d) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

NOTE : Hydraulic system must be depressurized and safety collars must be installed on landing gear door actuating jacks prior to starting work in landing gear bay.

(6) Close gear doors.

(a) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(b) On nose and LH main landing gear leg, place handles in doors closed position ; indicator plate showing white. Install locking cap.

(b1) Main and nose landing gear doors close.

(b2) On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE and RH arrows extinguish.

(c) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Close-Up

(1) Disconnect hydraulic ground power unit (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Check that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

(6) Remove safety barriers.

4. System Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack with Lifting Capability Greater than 81600 daN (183 621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device-Pyramid Adapter, LH	D921485000
Balancing Device-Pyramid Adapter, RH	D921485001
Pyramid Adapter-Lifting, LH	D924008000
Pyramid Adapter-Lifting, RH	D924008001
Jacking Pad-Nose	D925370000
Safety stay	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EHH398E
Electrical Ground Power Unit	
Safety Barriers	
Circuit Breaker Safety Clips	
Nose and Main Gear Wheel Change Jack (Inflated Tyres)	07-20-0001
Jack-Steering, Nose Gear Wheel	1761/1
Safety Collars- Main Landing Gear Door-Actuating Cylinder	D921317000
Safety Sleeve-Nose Landing Gear Doors	D925002000
Towing Bar	
Snapwire dia. 0.5 mm (0.020 in.)	
Access Platform	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that landing gear Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
STATIC INV SUP		X 138	N10
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
UC DOWNLOCK VISUAL IND		G 241	C 8
NOSE U/C W/SW "B" SUP		G 296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(8) Make certain that landing gear and shortening mechanism safety devices are in position.

(9) Connect hydraulic ground power unit to Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Position safety barriers.

C. Check of Main Landing Gear Bogie Beam Alignment Monitoring

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open nose and main landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on door actuating jacks.

(8) Make certain that nose landing gear wheels are centred.

(9) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(10) Open access door 123AB.

(11) Position jack under LH landing gear bogie beam forward jacking pad and jack bogie beam out of alignment.

(a) On panel 2-123 voltage is zero between terminals A and B of connector UT1837-14.

(12) Remove jack.

(a) Voltage is 28 volts between terminals A and B of connector UT 1837-14.

(13) Position jack under RH landing gear bogie beam forward jacking pad and jack bogie beam out of alignment.

(a) On panel 2-123 voltage is zero between terminals A and B of connector UT1837-14.

(14) Remove jack.

(a) Voltage is 28 volts between terminals A and B of connector UT1837-14.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Remove safety collars.

(17) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(19) Close nose and main landing gear doors (Ref. paragraph 3.E.).

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(22) Close access door 123AB.

D. Landing Gear Retraction Interdiction Test with RH Main Landing Gear and Nose Landing Gear Shock Absorbers not Extended.

WARNING : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(1) Make certain that visor is not uplocked.

(2) Open door 151DB.

(3) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(4) Disconnect main gear safety electrovalve connector (G31A).

(5) Remove safety clip and tag and reset circuit breaker (G3).

(6) Release RH main landing gear shock absorber pressure (Ref.
32-11-27, Servicing).

(7) Position a jack under each RH main landing gear jacking pad and compress shock absorber.

(8) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) At electrical connector (G31A) voltage is zero between terminals A and C.

(9) Remove jacks.

(10) Charge shock absorber (Ref. 32-11-27, Servicing).

(a) At electrical connector (G31A) voltage between terminals A and C is 28 volts.

(11) Release pressure from nose landing gear shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(12) Position jack 1761/1 under nose landing gear jacking pad and compress shock absorber.

(a) At electrical connector (G31A) voltage between terminals A and C is zero.

(13) Remove jack 1761/1.

(14) Charge nose gear shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(a) At electrical connector (G31A) voltage between terminals A and C is 28 volts.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(17) Connect electrical connector (G31A) to main landing gear safety electrovalve.

(18) Close access door 151DB.

(19) Remove safety clip and tag and reset circuit breaker (G3).

(20) Carry out a Normal main landing gear door opening and closing (Ref. 32-00-00, Servicing).

E. Landing Gear Normal Control Lever Up Selection Interdiction Test with LH Main Landing Gear Shock Absorber Compressed and Override of Interdiction

<u>WARNING</u> : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(1) Release LH main landing gear shock absorber pressure (Ref. 32-11-27, Servicing).

(2) Position a jack under each LH main landing gear jacking pad and compress shock absorber.

(a) On First Officer's instrument panel, make certain that landing gear Normal control lever cannot be placed in UP position.

(3) On First Officer's instrument panel, press O/RIDE PRESS pushbutton.

(a) Landing gear Normal control lever moves to UP position.

(4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(5) Restore O/RIDE pushbutton to initial configuration and safety with 0.5 mm (0.020 in.) snapwire (Ref. 20-26-13).

(6) Remove jack.

(7) Charge shock absorber (Ref. 32-11-27, Servicing).

F. Nose Wheel Centred Monitoring Test

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Make certain that visor is not uplocked.

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open nose and main landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on landing gear door jacks.

(8) Open access door 123AB.

(9) Release pressure from nose gear shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(11) Position jack 1761/1 under nose landing gear jacking pad and compress shock absorber.

(12) Move nose wheel out of alignment using towing bar.

(a) On panel 2-123 voltage is zero between terminals A and B of connector UT1837-14.

(13) Align wheel and remove towing bar.

(a) On connector UT1837-14 voltage is 28 volts between terminals A and B.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Remove jack 1761/1 and charge shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(16) Close access door 123AB.

(17) Remove safety collars.

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(20) Close nose and main landing gear doors (Ref. paragraph 3.E.).

(21) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(22) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Check of Landing Gear Door Monitoring During Landing Gear Extension

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open nose and main landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on landing gear door jacks.

NOTE : Re-install safety collars after each door operation.

(8) Open access door 123AB.

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(10) Remove safety collars and pivot main and nose landing gear doors manually one after the other.

(a) On panel 2-123 check that the 28V current between terminals A and B of connector UT1837-9 is cut off at beginning of door travel.

(11) Close access door 123AB.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Remove safety collars.

(14) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(16) Close nose and main landing gear doors (Ref. paragraph 3.E.).

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

H. Check of Door Monitoring During Landing Gear Retraction

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open nose and main landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on door actuating jacks.

NOTE : Re-install safety collars after each door operation.

(8) Open access door 123AB.

(9) Make certain that nose gear wheels are centred.

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(11) Remove safety collars and pivot main and nose landing gear doors manually one after the other.

(a) On panel 2-123, check that the 28V current between terminals A and B of connector UT1837-14 is cut off at beginning of door travel.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Remove safety collars.

(14) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(16) Close nose and main landing gear doors (Ref. paragraph 3.E).

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

I. Uplock Monitoring Check on Landing Gear Door Closure (Retraction Sequence)

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open nose and main landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on landing gear door actuating jacks.

(8) Open access door 123AB.

(9) Place nose and RH main landing gear uplocks in uplocked position.

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) On panel 2-123 voltage is zero between terminals C and D of connector UT1837-8.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Close access door 123AB.

(13) Remove safety collars.

(14) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing

R gear Normal control lever in DOWN position.

(a) Nose and RH main landing gear uplocks release.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(16) Close nose and main landing gear doors (Ref. paragraph 3.E.).

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

J. Landing Gear Downlocking Monitoring Check on Landing Gear Door Closure (Extension Sequence)

(1) Make certain that visor is not uplocked.

(2) Make certain that nose gear wheels are centred.

(3) Remove RH landing gear and shortening mechanism safety devices.

(4) Open access door 123AB.

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT NOSE AND LH MAIN GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(6) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Landing gear doors open, RH landing gear uplocks.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On panel 2-123, voltage is zero between terminals C and D on connector UT1837-6.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(a) The RH main gear downlocks, gear doors close.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(13) Install RH main gear and shortening mechanism safety devices.

(14) Remove LH main gear and shortening mechanism safety devices.

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(16) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Gear doors open, the LH main gear uplocks.

(17) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On panel 2-123, voltage is zero between terminals C and D of connector UT1837-6.

(19) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(a) The LH main gear downlocks, landing gear doors close.

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(22) On First officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(23) Install LH main gear and shortening mechanism safety devices.

K. Safety Electrovalves Leakage and Electrical Supply Test

(1) Place visor and droop nose in up position (Ref. 27-62-00, Servicing).

(2) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(3) Open access door 151DB and disconnect electrical connector (G31A) from main landing gear safety electrovalve.

(4) Remove safety clip and tag and reset circuit breaker (G 3).

(a) On electrical connector (G31A), voltage is zero between terminals A and C.

(5) Lower visor (Ref. 27-62-00, Servicing).

(6) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE U/C W/SW "B" SUP	3-213	G 296	D 8
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
REFUEL CONT FAIL IND		Q 513	E20

(7) Connect safety electrovalve (G31) electrical connector (G31A), close access door 151DB.

(8) Remove safety clip and tag and reset circuit breaker (G3).

(9) Carry out a Normal main landing gear door opening and closing (Ref. 32-00-00, Servicing).

(10) On nose landing gear, disconnect nose gear weight microswitch (G321) electrical connector (G321A).

(11) On First Officer's instrument panel, place landing

gear Normal control lever in DOWN position.

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(13) On LH main landing gear leg, remove locking cap and place handle in doors open position ; indicator plate showing red.

(a) The doors do not open.

(14) On LH main landing gear leg, place handle in doors closed position ; indicator plate showing white. Install locking cap.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, servicing).

(17) Trip, safety and tag circuit breaker (G3).

(18) Connect nose gear weight microswitch (G321) electrical connector (G321A).

(19) Remove safety clips and tags and reset circuit breakers (G296), (G3) and (Q513).

(20) Carry out a Normal main landing gear door opening and closing (Ref. 32-00-00, Servicing).

L. Landing Gear Retraction Manoeuvre

(1) Make certain that visor is not uplocked.

NOTE : With gear downlocked and landing gear Normal control lever in NEUTRAL position. On First Officer's instrument panel, green LH, NOSE T and RH arrows on gears position indicating unit are illuminated.

(2) Remove main and nose landing gear and shortening mechanism safety devices.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Main and nose landing gear doors open.

(a1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(a2) Landing gear door opening time is approximately 2 seconds.

(b) Landing gear retraction.

(b1) Landing gear unlocks.
Green LH, NOSE, T and RH arrows extinguish.

(b2) Landing gear retraction
Red warning light corresponding to green T arrow then amber UPPER LOCKS light illuminate.

(b3) Landing gear uplocks.
Red warning light corresponding to green T arrow, then amber UPPER LOCKS light extinguish.

(b4) Retraction times are approximately 6.5 sec. for tail landing gear 8 sec. for nose landing gear 8 sec. for main landing gear.

(c) Main and nose landing gear doors uplock.

(c1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(c2) Landing gear door closing time is approximately 2.5 sec.

<u>NOTE</u> : Total duration of landing gear retraction manoeuvre is approximately 13.0 sec.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

M. Landing Gear Extension Manoeuvre

(1) Make certain that visor is not uplocked.

NOTE : With landing gear uplocked and landing gear Normal control lever in NEUTRAL position, on First Officer's instrument panel, all lights on gears position indicating unit are off.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On gears position indicating unit, amber LH SHORT, UPPER LOCKS and RH SHORT lights illuminate.

(b) Main and nose landing gear doors open.

(b1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(b2) Landing gear door opening time is approximately 2 sec.

(c) Landing gear extension.

(c1) Landing gear unlocks.
Red warning light corresponding to green T arrow comes on, amber UPPER LOCKS light extinguishes.

(c2) Landing gear downlocks.
Red warning light corresponding to green T arrow extinguishes and green T arrow illuminates. Amber LH SHORT and RH SHORT lights extinguish.
Green NOSE arrow, then green LH and RH arrows illuminate.

(c3) Extension time is approximately :
4.5 sec. for tail landing gear.
6 sec. for nose landing gear.
11 sec. for main landing gear.

(d) Landing gear doors uplock.

(d1) Red warning lights corresponding to green LH, NOSE, T and RH arrows extinguish.

(d2) Landing gear door closing time is approximately 2.3 seconds.

NOTE : Total extension sequence time is 15 ± 2.5 seconds.

(4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) Green LH, NOSE, T and RH arrows remain illuminated.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Install landing gear and shortening mechanism safety devices.

N. Landing Gear Retraction Test with Droop Nose and Visor Uplocked.

NOTE : With gear downlocked and landing gear Normal control lever in NEUTRAL position. On First Officer's instrument panel green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(1) Remove landing gear and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) Place visor and droop nose in up position (Ref. 27-62-00, Servicing).

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Nose and main landing gear doors open.

(a1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(b) Landing gear unlocks.

(b1) Green LH, NOSE, T and RH arrows extinguish.

(b2) Red warning light corresponding to green T arrow illuminates.

(b3) Amber UPPER LOCKS light illuminates.

(c) Landing gear uplocks.

(c1) Red warning light corresponding to green T arrow extinguishes.

(c2) Amber UPPER LOCKS light extinguishes.

(d) Nose and main landing gear doors uplock.

(d1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) On gears position indicating unit all lights are extinguished.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Nose and main gear doors should remain closed.

(b) On gears position indicating unit, amber LH SHORT, UPPER LOCKS and RH SHORT lights illuminate.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Place visor and droop nose in down position (Ref. 27-62-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(9) Place landing gear Normal control lever in DOWN position.

(a) On gears position indicating unit amber LH SHORT, UPPER LOCKS and RH SHORT lights illuminate.

(b) Nose and main landing gear doors open.

(b1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(c) Landing gear unlocks.

(c1) Red warning light corresponding to green T arrow illuminates. Amber UPPER LOCKS light extinguishes.

(d) Landing gear downlocks.

(d1) Red warning light corresponding to green T arrow extinguishes.

(d2) Green T then NOSE arrows illuminate.

(d3) Amber LH SHORT and RH SHORT lights extinguish. Green LH and RH arrows illuminate.

(e) Landing gear doors uplock.

(e1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) On gears position indicating unit, green LH, NOSE, T and RH arrows remain illuminated.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Install landing gear and shortening mechanism safety devices.

O. Landing Gear Extension with Ram Air Turbine Extended Interdiction Test

NOTE : With gear downlocked and landing gear Normal control lever in NEUTRAL position. On First Officer's instrument panel, green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(1) Make certain that visor is not uplocked.

(2) Remove landing gear and shortening mechanism safety devices.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(5) On First Officer's instrument panel, on gears position indicating unit, make certain that all lights are extinguished (gear uplocked).

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) On Flight Engineer's panel, on CONTROL RAT control panel place and hold one of the ram air turbine uplock release control switches in TEST position.

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On First Officer's instrument panel, on gears position indicating unit, amber LH SHORT, UPPER LOCKS and RH SHORT lights illuminate, the other lights remain extinguished (gear remains up-locked).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(9) On Flight Engineer's panel, on CONTROL RAT control unit, release ram air turbine uplock release control switch (switch returns to OFF position).

(a) Landing gear extends and downlocks, landing gear doors close.

(b) On First Officer's instrument panel, on gears position indicating unit, green LH, NOSE, T and RH arrows illuminate, the other lights are extinguished.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) On First Officer's instrument panel, on gears position indicating unit, LH, NOSE, T and RH arrows remain illuminated.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Install landing gear and shortening mechanism safety devices.

P. Close-Up

(1) Disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Make certain that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels (Ref. 07-11-00).

(6) Remove safety barriers.

END OF THIS SECTION

NEXT

NORMAL EXTENSION AND RETRACTION - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITION OF NOSE AND MAIN GEAR DOORS CORRESPONDS WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Make certain that landing gear extends and retracts correctly and that each phase is correctly indicated.

B. Check that devices preventing landing gear retraction with aircraft on its wheels operate correctly.

C. Make certain that the supersonic flight landing gear extension interdiction operates correctly.

D. Check that landing gear door ground opening mechanisms operate correctly.

2. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH UC WEIGHT SW "A" SYS SUP	1-213	G 292	M17
UC POSN IND		G 51	N16
PLTS LT TEST SUP	15-215	L1001	E14
3CM STN LH LT TEST SUP 2	15-216	L1004	C13

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Gears Position Indicating Unit

(1) On First Officer's instrument panel, Green LH NOSE, T and RH arrows on gears position indicating unit are illuminated.

(2) On First Officer's RH side panel place and hold D/B LIGHT switch in TEST position.

(a) On gears position indicating unit amber UPPER LOCKS, LH SHORT and RH SHORT lights and the four red warning lights illuminate.

(3) Release D/B LIGHT switch.

(a) Amber UPPER LOCKS, LH SHORT, RH SHORT lights and the four red warning lights extinguish.

NOTE : Green LH, NOSE, T and RH arrows remain on.

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

3. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack With Lifting Capability Greater than 81600 daN (183 621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device-Pyramid Adapter-LH	D921485000
Balancing Device-Pyramid Adapter-RH	D921485001
Pyramid Adapter-Lifting-LH	D924008000
Pyramid Adapter-Lifting-RH	D924008001
Jacking Pad-Nose	D925370000
Safety Stay	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH38E
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console check that landing gear Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Make certain that visor is not uplocked.

(7) Position safety barriers.

(8) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(9) Connect hydraulic ground power unit to Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G291	M16
LH UC WEIGHT SW "A" SYS SUP		G292	M17
RH UC WEIGHT SW & DOWN-LOCK "A" SYS SUP		G295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWN-LOCK "B" SYS SUP	3-213	G293	B 8
RH UC WEIGHT SW "B" SYS SUP		G294	B 9
NOSE U/C W/SW "B" SUP		G296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

C. Landing Gear Retraction Manoeuvre

(1) Make certain that visor is not uplocked.

NOTE : With landing gear downlocked and landing gear Normal control lever in NEUTRAL position : On First Officer's instrument panel, green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(2) Remove landing gear and shortening mechanism safety devices.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Nose gear and main gear doors open.

(a1) The red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(b) Landing gear retraction.

(b1) Gears unlock.

- Green LH, NOSE, T and RH arrows extinguish.

(b2) Landing gears retract.

- Red warning light corresponding to green T arrow illuminates.
- Amber UPPER LOCKS light illuminates.

(b3) Gears uplock.

- Red warning light corresponding to green T arrow extinguishes.
- Amber UPPER LOCKS light extinguishes.

(c) Main and nose gear doors uplock.

(c1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(5) On First Officer's instrument panel, place landing

gear Normal control lever in NEUTRAL position.

(a) All lights are extinguished on gears position indicating unit.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Landing Gear Extension Manoeuvre

(1) Make certain that visor is not uplocked.

NOTE : With landing gear retracted and landing gear Normal control lever in NEUTRAL position, all lights on gears position indicating unit are extinguished.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On First Officer's instrument panel, amber LH SHORT, UPPER LOCKS and RH SHORT lights on gears position indicating unit illuminate.

(b) Main and nose gear doors open.

(b1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(c) Landing gear extension

(c1) Gears unlock.

- Red warning light corresponding to green T arrow comes on ;
- Amber UPPER LOCKS light extinguishes.

(c2) Gears downlock.

- Red warning light corresponding to green T arrow extinguishes.
- Green T then NOSE arrows come on.
- Amber LH SHORT and RH SHORT lights go off, green LH and RH arrows come on.

(d) Gear doors uplock.

(d1) Red warning lights corresponding to green LH, NOSE and RH arrows go off.

(4) Place landing gear Normal control lever in NEUTRAL position.

(a) Green LH, NOSE, T and RH arrows remain on.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Install landing gear and shortening mechanism safety devices.

E. Landing Gear Door Ground Manoeuvre Test

NOTE : This test can be carried out with aircraft on its wheels or on jacks.

WARNING : BEFORE OPENING OR CLOSING MAIN AND NOSE GEAR DOORS CHECK THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(1) Make certain that visor is not uplocked.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Pressurize Green hydraulic system (29-11-00, Servicing).

(4) On First Officer's instrument panel, make certain that green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(5) Open main gear doors.

(a) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(b) On LH main gear leg, remove locking cap from door operating handle.

(c) Turn operating handle to open position ; indicator plate showing red.

(c1) Both main gear doors open simultaneously.

(c2) On First Officer's instrument panel, red warning lights, on gears position indicating unit, corresponding to green LH and RH arrows illuminate.

(d) Install locking cap on landing gear door operating handle.

(e) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Open nose gear doors.

(a) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(b) On nose gear leg remove locking cap from door operating handle.

(c) Turn operating handle to open position ; indicator plate showing red.

(c1) Both nose gear doors open simultaneously.

(c2) On First Officer's instrument panel red warning light on gears position indicating unit corresponding to green NOSE arrow illuminates.

(d) Install locking cap on door operating handle.

(e) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

NOTE : Hydraulic system must be depressurized and safety collars must be installed on landing gear door actuating jacks prior to starting work in landing gear bay.

(7) Close main gear doors.

(a) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(b) On LH main gear leg remove locking cap from door operating handle.

(c) Turn operating handle to closed position ; indicator plate showing white.

(c1) Both main gear doors close simultaneously.

(c2) On First Officer's instrument panel red warning lights, on gears position indicating unit, corresponding to green LH and RH arrows extinguish.

(d) Install locking cap on door operating handle.

(e) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Close nose landing gear doors

(a) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(b) On nose landing gear leg remove locking cap from operating handle.

(c) Turn operating handle to closed position ; indicator plate showing white.

(c1) Both nose gear doors close simultaneously.

(c2) On First Officer's instrument panel red warning light, on gears position indicating unit, corresponding to green NOSE arrow extinguishes.

(d) Install locking cap on landing gear door operating handle.

(e) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Close-Up

(1) Disconnect hydraulic ground power unit (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Check that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

(6) Remove safety barriers.

4. System Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack With Lifting Capability Greater than 81600 daN (183 621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device-Pyramid Adapter, LH	D921485000
Balancing Device-Pyramid Adapter, RH	D921485001
Pyramid Adapter-Lifting, LH	D924008000
Pyramid Adapter-Lifting, RH	D924008001
Jacking Pad-Nose	D925370000
Safety Stay	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Safety Barriers	
Circuit Breaker Safety Clips	
Nose and Main Gear Wheel Change Jack (Inflated Tyres)	07-20-0001
Jacking-Steering, Nose Gear Wheel	1761/1
Safety Collars-Main Landing Gear Door-Actuating Cylinder	D921317000
Safety Sleeve-Nose Landing Gear Doors	D925002000
Towing Bar	
Access Platform	
Snapwire 0.5 mm (0.020 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that landing gear Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Connect electrical ground-power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWN-LOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
STATIC INV SUP		X 138	N10
LH UC WEIGHT SW & DOWN-LOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
UC DOWNLOCK VISUAL IND		G 241	C 8
NOSE U/C W/SW "B" SUP		G 296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(8) Make certain that landing gear and shortening mechanism safety devices are in position.

(9) Connect hydraulic ground power unit to Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Position safety barriers.

C. Check of Main Landing Gear Bogie Beam Alignment Monitoring

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open main and nose landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on door actuating jacks.

(8) Make certain that nose landing gear wheels are centred.

(9) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(10) Open access door 123AB.

(11) Position jack under LH landing gear bogie beam forward jacking pad and jack bogie beam out of alignment.

(a) On panel 2-123 voltage is zero between terminals A and B of connector UT1837-14.

(b) On Flight Engineer's panel, LH (BOGIE BEAM) light on FAULT ANNUNCIATOR illuminates.

(12) Remove jack.

(a) Voltage is 28 volts between terminals A and B of connector UT1837-14.

(b) On FAULT ANNUNCIATOR LH (BOGIE BEAM) light extinguishes.

(13) Position jack under RH landing gear bogie beam forward jacking pad and jack bogie beam out of alignment.

(a) On panel 2-123 voltage is zero between terminals A and B of connector UT1837-14.

(b) On Flight Engineer's panel, RH (BOGIE BEAM) light on FAULT ANNUNCIATOR illuminates.

(14) Remove jack.

(a) Voltage is 28 volts between terminals A and B of connector UT1837-14.

(b) On FAULT ANNUNCIATOR RH (BOGIE BEAM) light extinguishes.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Remove safety collars.

(17) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(19) Close main and nose landing gear doors (Ref. paragraph 3.E.).

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(22) Close access door 123AB.

D. Landing Gear Retraction Interdiction Test With RH Main Landing Gear and Nose Landing Gear Shock Absorbers not Extended.

WARNING : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(1) Make certain that visor is not uplocked.

(2) Open door 151DB.

(3) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(4) Disconnect main gear safety electrovalve connector (G31A).

(5) Remove safety clip and tag and reset circuit breaker (G3).

(6) Release RH main landing gear shock absorber pressure (Ref. 32-11-27, Servicing).

(7) Position a jack under each RH main landing gear jacking pad and compress shock absorber.

(8) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) At electrical connector (G31A) voltage is zero between terminals A and C.

(b) On Flight Engineer's panel, RH-NOSE (SHOCK ABSORB) light on FAULT ANNUNCIATOR comes on.

(9) Remove jacks.

(10) Charge shock absorber (Ref. 32-11-27, Servicing).

(a) At electrical connector (G31A) voltage between terminals A and C is 28 volts.

(b) RH-NOSE light extinguishes.

(11) Release pressure from nose landing gear shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(12) Position jack 1761/1 under nose landing gear jacking pad and compress shock absorber.

(a) At electrical connector (G31A) voltage between terminals A and C is zero.

(b) On Flight Engineer's panel, RH-NOSE (SHOCK ABSORB) light on FAULT ANNUNCIATOR illuminates.

(13) Remove jack 1761/1.

(14) Charge nose gear shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(a) At electrical connector (G31A) voltage between terminals A and C is 28 volts.

(b) RH-NOSE light extinguishes.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(17) Connect electrical connector (G31A) to main landing gear safety electrovalve.

(18) Close access door 151DB.

(19) Remove safety clip and tag and reset circuit breaker (G3).

(20) Carry out a Normal main landing gear door opening and closing (Ref. 32-00-00, Servicing).

E. Landing Gear Normal Control Lever Up Selection Interdiction Test With LH Main Landing Gear Shock Absorber Compressed and Override of Interdiction.

WARNING : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(1) Release LH main landing gear shock absorber pressure (Ref. 32-11-27, Servicing).

(2) Position a jack under each LH main landing gear jacking pad and compress shock absorber.

(a) On First Officer's instrument panel, make certain that landing gear Normal control lever cannot be placed in UP position.

(b) Flight Engineer's panel, LH light on FAULT ANNUNCIATOR illuminates.

(3) On First Officer's instrument panel, press O/RIDE PRESS pushbutton.

(a) Landing gear Normal control lever moves to UP position.

(4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(5) Restore O/RIDE pushbutton to initial configuration and safety with 0.5 mm (0.020 in.) snapwire (Ref. 20-26-13)

(6) Remove jack.

(7) Charge shock absorber (Ref. 32-11-27, Servicing).

(a) LH light on FAULT ANNUNCIATOR extinguishes.

F. Nose Wheel Centred Monitoring Test

(1) Pressurize Green hydraulic system Ref. 29-11-00, Servicing).

(2) Make certain that visor is not uplocked.

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open main and nose landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on landing gear door jacks.

(8) Open access door 123AB.

(9) Release pressure from nose gear shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(11) Position jack 1761/1 under nose landing gear jacking pad and compress shock absorber.

(12) Move nose wheel out of alignment using towing bar.

(a) On panel 2-123 voltage is zero between terminals A and B of connector UT1837-14.

(b) On Flight Engineer's panel, NOSE (WHEEL ALIGN) light on FAULT ANNUNCIATOR illuminates.

(13) Align wheel and remove towing bar.

(a) On connector UT1837-14 voltage is 28 Volts between terminals A and B.

(b) NOSE (WHEEL ALIGN) light on FAULT ANNUNCIATOR extinguishes.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Remove jack 1761/1 and charge shock absorber low pressure chamber (Ref. 32-21-24, Servicing).

(17) Remove safety collars.

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(20) Close main and nose landing gear doors (Ref. paragraph 3.E.).

(21) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(22) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Check of Landing Gear Door Monitoring During Landing Gear Extension

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open main and nose landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on landing gear door jacks.

NOTE : Re-install safety collars after each door operation.

(8) Open access door 123AB.

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(10) Remove safety collars and pivot main and nose landing gear doors manually one after the other.

(a) On panel 2-123 check that the 28V current between terminals A and B of connector UT1837-9 is cut off at beginning of door travel.

(11) Close access door 123AB.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Remove safety collars.

(14) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(16) Close main and nose landing gear doors (Ref. paragraph 3.E.).

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

H. Check of Door Monitoring During Landing Gear Retraction

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open main and nose landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on door actuating jacks.

NOTE : Re-install safety collars after each door operation.

(8) Open access door 123AB.

(9) Make certain that nose gear wheels are centred.

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(11) Remove safety collars and pivot main and nose landing gear doors manually one after the other.

(a) On panel 2-123, check that the 28V current between terminals A and B of connector UT1837-14 is cut off at beginning of door travel.

(b) On Flight Engineer's panel, the following lights on FAULT ANNUNCIATOR come on during door closing sequence.

LH (NOSE DOORS) for LH nose landing gear door.
RH (NOSE DOORS) for RH nose landing gear door.
LH (MAIN DOORS) for LH main landing gear door.
RH (MAIN DOORS) for RH main landing gear door.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Remove safety collars.

(14) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(16) Close main and nose landing gear doors.

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

I. Uplock Monitoring Check on Landing Gear Door Closure (Retraction Sequence)

(1) Make certain that visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(4) Open main and nose landing gear doors (Ref. paragraph 3.E.).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety collars on landing gear door actuating jacks.

(8) Open access door 123AB.

(9) Place nose and RH main landing gear uplocks in uplocked position.

(10) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) On panel 2-123 voltage is zero between terminals C and D of connector UT1837-8.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Close access door 123AB.

(13) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) On first officer's instrument panel place landing gear Normal Control lever in DOWN position.

(a) RH main landing gear uplock releases.

(b) Nose landing gear uplock must be manually positioned to released position. (This is due to over-centre spring operation).

(15) Remove safety collars.

(16) Close main and nose landing gear doors (Ref. paragraph 3.E.).
Close nose landing gear doors by operating handle located on nose landing gear leg. Install locking cap.

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

J. Landing Gear Downlocking Monitoring Check on Landing Gear Door Closure (Extension Sequence).

(1) Make certain that visor is not uplocked.

(2) Make certain that nose gear wheels are centred.

(3) Remove RH landing gear and shortening mechanism safety devices.

(4) Open access door 123AB.

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

<u>WARNING</u> : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT NOSE AND LH MAIN GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(6) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Landing gear doors open, RH landing gear uplocks.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On panel 2-123, voltage is zero between terminals C and D on connector UT1837-6.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(a) The RH main gear downlocks, gear doors close.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(13) Install RH main gear and shortening mechanism safety devices.

(14) Remove LH main gear and shortening mechanism safety devices.

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(16) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Gear doors open, the LH main gear uplocks.

(17) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On panel 2-123, voltage is zero between terminals C and D of connector UT1837-6.

(19) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(a) The LH main gear downlocks, landing gear doors close.

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(22) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(23) Install LH main gear and shortening mechanism safety devices.

K. Safety Electrovalve Leakage and Electrical Supply Test

(1) Place visor and droop nose in up position (Ref. 27-62-00, Servicing).

(2) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(3) Open access door 151DB and disconnect electrical connector (G31A) from main landing gear safety electrovalve.

(4) Remove safety clip and tag the reset circuit breaker (G3).

(a) On electrical connector (G31A), voltage is zero between terminals A and C.

(5) Lower visor (Ref. 27-62-00, Servicing).

(6) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE U/C W/SW "B" SUP	3-213	G296	D 8
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
REFUEL CONT FAIL IND		Q513	E20

(7) Connect safety electrovalve electrical connector (G31A), close access door 151DB.

(8) Remove safety clip and tag and reset circuit breaker (G3).

(9) Carry out a Normal main landing gear door opening and closing (Ref. 32-00-00, Servicing).

- Leave landing gear Normal control lever in NEUTRAL position.

(10) On nose landing gear, disconnect nose gear weight microswitch (G320) and (G321) electrical connectors (G320A) and (G321A).

(a) Earth out pin C on connection (G320A).

(b) Check that circuit breaker (G291) is set.

(11) On first officer's instrument panel, place landing gear Normal control lever in DOWN position.

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(13) On nose landing gear leg, turn operating handle to open position; indicator plate showing red.

(a) Nose landing gear doors do not open.

(14) On nose landing gear leg, turn operating handle to close position; indicator plate showing white.

(15) On LH main landing gear leg, turn operating handle to open position; indicator plate showing red.

(a) Main landing gear doors do not open.

(16) On LH main landing gear leg, turn operating handle to close position; indicator plate showing white.

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Remove earth from pin C on connection (G320A).

(19) Carry out Normal N.L.G. opening and closing (Ref. 32-00-00 Servicing).

- Doors should open and close normally.

(20) Earth out pin C on connection (G320A) and refit connector (G321A) to microswitch (G321).

(a) Carry out item (19).

(21) Remove earth from pin C on connector (G320A) and reconnect to microswitch (G320).

(22) Remove safety clips and tags and reset circuit breakers (G296) and Q513).

(23) Carry out Normal main landing gear door opening and closing (Ref 32-00-00, Servicing).

L. Landing Gear Retraction Manoeuvre

(1) Make certain that visor is not uplocked.

NOTE : With gear downlocked and landing gear Normal control lever in NEUTRAL position.
On First Officer's instrument panel green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(2) Remove main and nose landing gear and shortening mechanism safety devices.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Main and nose landing gear doors open.

(a1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(a2) Landing gear door opening time is approximately 2 seconds.

(b) Landing gear retraction.

(b1) Landing gear unlocks.
Green LH, NOSE, T and RH arrows extinguish.

(b2) Landing gear retraction.
Red warning light corresponding to green T arrow then amber UPPER LOCKS light illuminate.

(b3) Landing gear uplocks.
Red warning light corresponding to green T arrow, then amber UPPER LOCKS light extinguish.

(b4) Retraction times are approximately
6.5 sec. for tail landing gear
8 sec. for nose landing gear
8 sec. for main landing gear

(c) Main and nose landing gear doors uplock.

(c1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(c2) Landing gear door closing time is approximately 2.5 sec.

NOTE : Total duration of landing gear retraction manoeuvre is approximately 13.0 sec.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

M. Landing Gear Extension Manoeuvre

(1) Make certain that visor is not uplocked.

NOTE : With landing gear uplocked and landing gear Normal control lever in NEUTRAL position, on First Officer's instrument panel, all lights on gears position indicating unit are off.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On gears position indicating unit amber LH SHORT UPPER LOCKS and RH SHORT lights illuminate.

(b) Main and nose landing gear doors open.

(b1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(b2) Landing gear door opening time is approximately 2 sec.

(c) Landing gear extension

(c1) Landing gear unlocks
Red warning light corresponding to green T arrow comes on, amber UPPER LOCKS light extinguishes.

(c2) Landing gear downlocks
Red warning light corresponding to green T arrow extinguishes and green T arrow illuminates. Amber LH SHORT and RH SHORT lights extinguish.
Green NOSE arrow, then green LH and RH arrows illuminate.

(c3) Extension time is approximately :
4.5 sec. for tail landing gear
6 sec. for nose landing gear
11 sec. for main landing gear

(d) Landing gear doors uplock

(d1) Red warning lights corresponding to green LH, NOSE, T and RH arrows extinguish.

(d2) Landing gear door closing time is approximately 2.3 seconds.

(4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) Green LH, NOSE, T and RH arrows remain illuminated.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Install landing gear and shortening mechanism safety devices.

N. Landing Gear Retraction Test with Droop Nose and Visor Uplocked

NOTE : With gear downlocked and landing gear Normal control lever in NEUTRAL position. On First Officer's instrument panel green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(1) Remove landing gear and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) Place visor and droop nose in up position (Ref. 27-62-00, Servicing).

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) Nose and main landing gear doors open.

(a1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(b) Landing gear unlocks.

(b1) Green LH, NOSE, T and RH arrows extinguish.

(b2) Red warning light corresponding to green T arrow illuminates.

(b3) Amber UPPER LOCKS light illuminates.

(c) Landing gear uplocks.

(c1) Red warning light corresponding to green T arrow extinguishes.

(c2) Amber UPPER LOCKS light extinguishes.

(d) Nose and main landing gear doors uplock.

(d1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) On gear position indicating unit all lights are extinguished.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Nose and main gear doors should remain closed.

(b) On gears position indicating unit, amber LH SHORT, UPPER LOCKS and RH SHORT lights illuminate.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Place visor and droop nose in down position (Ref. 27-62-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(9) Place landing gear Normal control lever in DOWN position.

(a) On gears position indicating unit amber LH SHORT, UPPER LOCKS and RH SHORT lights illuminate.

(b) Nose and main landing gear doors open.

(b1) Red warning lights corresponding to green LH, NOSE and RH arrows illuminate.

(c) Landing gear unlocks.

(c1) Red warning light corresponding to green T arrow illuminates. Amber UPPER LOCKS light extinguishes.

(d) Landing gear downlocks.

(d1) Red warning light corresponding to green T arrow extinguishes.

(d2) Green T then NOSE arrows illuminate.

(d3) Amber LH SHORT and RH SHORT lights extinguish. Green LH and RH arrows illuminate..

(e) Landing gear doors uplock.

(e1) Red warning lights corresponding to green LH, NOSE and RH arrows extinguish.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) On gears position indicating unit, green LH, NOSE, T and RH arrows remain illuminated.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Install landing gear and shortening mechanism safety devices.

O. Landing Gear Extension with Ram Air Turbine Extended Interdiction Test

NOTE : With gear downlocked and landing gear Normal control lever in NEUTRAL position. On First Officer's instrument panel, green LH, NOSE, T and RH arrows on gears position indicating unit are illuminated.

(1) Make certain that visor is not uplocked.

(2) Remove landing gear and shortening mechanism safety devices.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(5) On First Officer's instrument panel, on gears position indicating unit, make certain that all lights are extinguished (gear uplocked).

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) On Flight Engineer's panel, on CONTROL RAT control panel place and hold one of the ram air turbine uplock release control switches in TEST position.

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On First Officer's instrument panel, on gears position indicating unit, amber LH SHORT, UPPER LOCKS and RH SHORT lights illuminate, the other lights remain extinguished (gear remains uplocked).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(9) On Flight Engineer's panel, on CONTROL RAT control unit, release ram air turbine uplock release control switch (switch returns to OFF position).

(a) Landing gear extends and downlocks, landing gear doors close.

(b) On First Officer's instrument panel, on gears position indicating unit, green LH, NOSE, T and RH arrows illuminate, the other lights are extinguished.

(10) On Fist Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) On First Officer's instrument panel, on gears position indicating unit, LH, NOSE, T and RH arrows remain illuminated.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Install landing gear and shortening mechanism safety devices.

P. Close-Up

(1) Disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Make certain that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels (Ref. 07-11-00).

(6) Remove safety barriers.

MAIN GEAR AND DOOR ELECTRO-HYDRAULIC SELECTORS - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main gear and door electro-hydraulic selectors are installed on a base plate located in Zone 151-152. Sealing between the base plate and selectors is achieved through spools.

R NOTE: Since door and main gear selectors are identical, only
R the Removal/Installation of the main gear selector
R (3412) is dealt with in this topic.

2. Main Gear and Doors Electro-Hydraulic Selectors

A. Equipment and Materials

DESCRIPTION	PART NO.
Container	
Access Platform 3.468 m (11 ft 4 in)	
Circuit Breaker Safety Clips	
Blanking Plugs/Caps	

DESCRIPTION	PART NO.
Lockwire - Dia. 1 mm (0.041 in) (Corrosion resistant steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Display warning notice in flight compartment.

(5) Shut down and depressurize Green and Yellow hydraulic system (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(6) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

R (7) Position container below selector valve to collect
R fluid spillage.

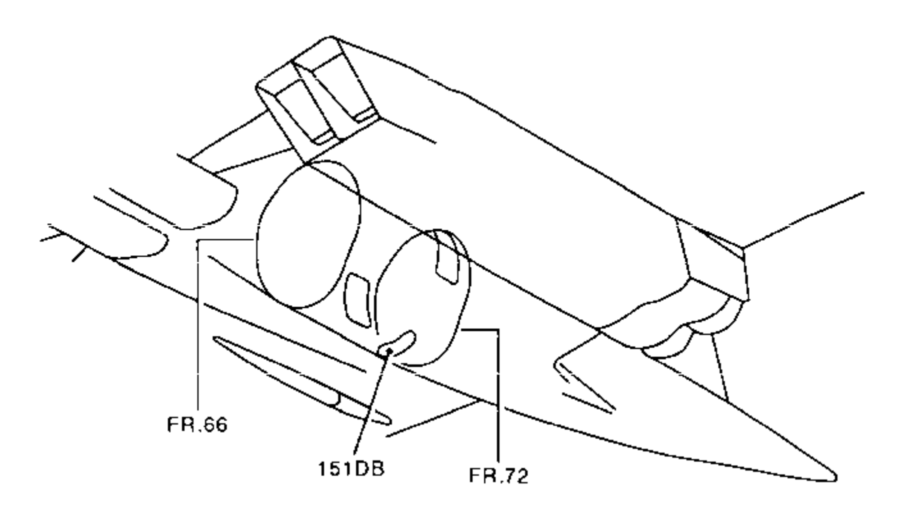
C. Remove

(1) Disconnect and cap electrical connector.

(2) Cut and remove lockwire, remove screws (4) and (1) attaching selector (10) to base plate. Retain washers (3) and (2) for reinstallation.

(3) Remove selector (10). Discard spools fitted with seals.

(4) Plug all base plate ports.



Main Gear and Door Electro-Hydraulic Selectors
R Figure 401

D. Preparation of Replacement Component

NOTE: The replacement selector is filled with Product No.011 (Ref. 20-30-00).

Make certain that replacement spools are correctly fitted with back-up rings (6) (7), and square section seals (5).

E. Install

(1) Remove plugs from base plate ports.

(2) Install spools (9) in recesses.

CAUTION: THE END OF THE SPOOL BEARING THE MARKING MUST BE INSTALLED FACING THE BASE PLATE.

(3) Remove plugs and position replacement selector.

(4) Secure selector (10) with screws (4) and (1) and washers (3) and (2).
Torque as follows:

Screw (4) 53 to 62 lbf in (0.60 to 0.70 mdaN).
Screw (1) 67 to 76 lbf in (0.75 to 0.85 mdaN).

(5) Safety screws (4) and (1) with lockwire.

(6) Remove protective cap and connect electrical connector.

(7) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(8) Remove safety clips and tags and reset circuit breakers.

(9) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

F. Test

R (1) On completion of the door selector (3401) Removal/
R Installation bleed the system by carrying out a
R minimum of five door opening and closings by means
R of the operating handle located on the LH main gear
R (Ref. 32-00-00, Servicing).

R (2) On completion of the main gear selector (3412)
R Removal/Installation:

R (a) Carry out a minimum of five normal Retractions/
R Extensions of the landing gear system to bleed
R the selector valve system of air (Ref. 32-31-00,
R Adjustment/Test).

R (b) Carry out selector pressurization and leakage
R test (Ref. Adjustment/Test).

(3) The replacement component must be thoroughly checked for leakage upon initial pressurization, and upon completion of tests.

G. Close-Up

(1) Remove container.

(2) Replenish tanks as required (Ref. 12-12-29).

(3) Close access doors.

(4) Remove access platform.

(5) Remove warning notice from flight compartment.

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

This topic deals only with the pressurization and leakage test of the main landing gear selector, after its removal and installation.

WARNING : PRESSURIZATION OF THE NORMAL LANDING GEAR SYSTEM, WITH AIRCRAFT ON WHEELS AND LANDING GEAR NORMAL CONTROL LEVER IN UP POSITION, CAN BE CARRIED OUT EXCEPTIONALLY IN CASE OF NEED (MAXIMUM PERMITTED FREQUENCY ONCE EVERY 100 FLIGHTS).

2. Main Gear Selector Pressurization and Leakage Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.468 m (11 ft. 4 in.)	
Snapwire, Dia 0.50 mm (0.020 in.)	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE UP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gear downlocked).

(7) Connect electrical ground power unit and energize the aircraft electrical network (24-41-00, Servicing).

(8) Install access platform.

(9) Open access door 151DB.

C. Test

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT LANDING GEAR DOOR TRAVEL

RANGES ARE CLEAR.

(3) Remove locking caps and open doors by means of operating handles located on LH main landing gear leg and nose gear leg.

(4) Check main landing gear selector for external leakage.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Make certain that nose landing gear wheels are centred.

(8) Open access door 123AB.

(9) On panel 2-123, connect terminal 14B on connector UT 1837 to ground.

(10) On nose gear, disconnect microswitch (G321) plug. Connect plug (G321A) terminal B to ground.

(11) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH UC WEIGHT SW "B" SYS SUP	3-213	G 294	B 9

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Press O/RIDE PRESS pushbutton and place landing gear Normal control lever in UP position.

(14) Check main landing gear selector for external leakage.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(17) On panel 2-213, reinstate relay box to initial configuration.

(18) Connect microswitch (G321) plug.

(19) Remove safety clip and tag and reset circuit breaker (G294).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(20) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(21) On First Officers instrument panel, place landing gear Normal control lever in DOWN position.

(22) Close doors by means of operating handles located on nose and LH main gear legs. Install locking caps.

(23) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(24) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Close access doors.

(3) Restore O/RIDE to initial condition and safety with 0.50 mm (0.020 in.) snapwire (Ref. 20-26-13).

(4) Remove access platform.

MAIN GEAR DOOR UPLOCK - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEARS.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A main landing gear door uplock is mounted in the lower part of each main landing gear bay. Each uplock is equipped with an uplock hook. This hook serves to hold the doors in the uplocked position with the landing gear either uplocked or downlocked.

Hook locking is mechanical, uplock release is hydraulic. Each uplock is equipped with a microswitch.

R CAUTION: TO ENSURE THAT DIMENSIONS 'A' AND 'B' ARE ACCURATELY
R SET, THE CONFIGURATION OF THE AIRCRAFT BETWEEN UPLOCK
R REMOVAL AND INSTALLATION MUST NOT CHANGE, i.e. THE
R AIRCRAFT MUST REMAIN ON ITS WHEELS (OR ON JACKS) AND
R THERE MUST BE NO CHANGE TO THE FUEL LOAD.

2. Main Gear Door Uplock

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Access Platform 3.220 m (10 ft 7 in)	-

DESCRIPTION	PART NO.
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Hydraulic Fluid Container	-
Blanking Plugs/Caps	-
Circuit Breaker Safety Clips	-
Lockwire, Dia 0.8mm (0.032 in) (Corrosion Resistant Steel)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Measure and note dimensions 'A' and 'B' (Ref. Fig. 401).

(a) Dimension 'A' (Ref. Detail G): distance by which roller protrudes from hook lower jaw.

(b) Dimension 'B' (Ref. Detail C) between the door stop and the structure stop.

NOTE: The dimensions noted above must be correct upon installation of removed items.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) Make certain that the visor is not uplocked.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) Remove locking cap and open gear doors, by operating handle located on LH main landing gear leg.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(12) Display a warning notice in the flight compartment.

(13) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(14) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(15) Install safety collars.

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

(2) Disconnect hydraulic lines.

(3) Disconnect rod (4) from lever (5) (Ref. Detail E).

(a) Remove nut (14).

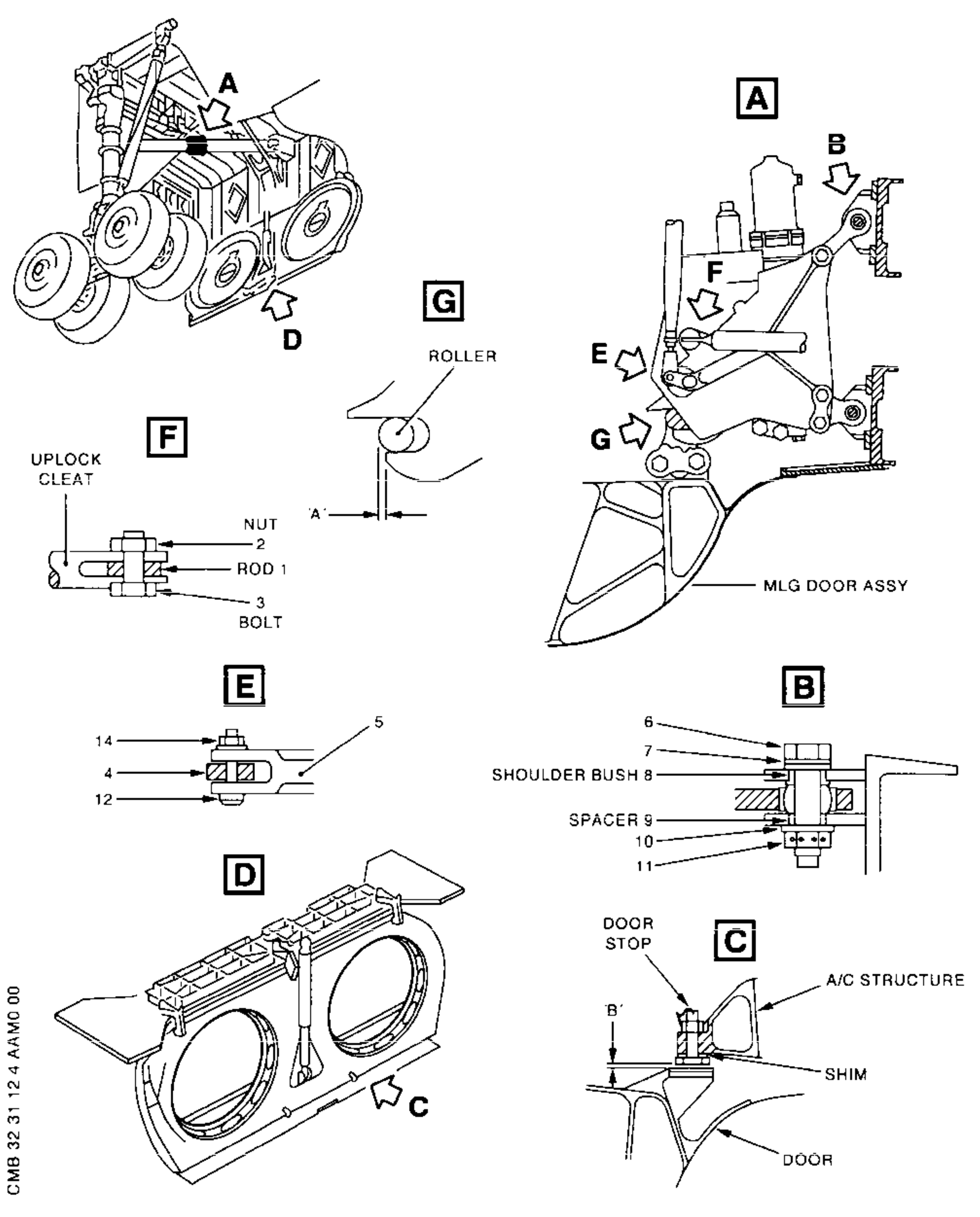
(b) Remove bolt (12).

(4) Disconnect rod (1) from uplock (Ref. Detail F).

(a) Remove nut (2).

(b) Remove bolt (3).

(5) Remove uplock (Ref. Detail B).



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Main Landing Gear Door Uplock
Figure 401

(a) Cut and remove lockwire and remove nut (11).

(b) Remove washer (10).

(c) Remove bolt (6) and washer (7).

(d) Retain spacers (9) for reinstallation.

NOTE: Do not remove shoulder bushes (8).

(6) Cap open hydraulic line ends.

D. Preparation of Replacement Component

NOTE: The uplock is filled with Product No.11 (Ref. 20-30-00).

(1) The replacement uplock is not fitted with its unions. Take them from removed component and replace seals before installation.

(2) Do not fully tighten elbow unions at this stage.

E. Install (Ref. Fig. 401)

R CAUTION: BEFORE INSTALLING THE UPLOCK ENSURE THE
R CONFIGURATION OF THE AIRCRAFT IS THE SAME AS WHEN
R THE UPLOCK WAS REMOVED.

(1) Remove blanking caps from hydraulic lines.

NOTE: Make certain shoulder bushes (8) are in position.

(2) Position and install uplock (Ref. Detail B).

(a) Install spacers (9).

(b) Insert bolt (6) with washer (7).

(c) Install washer (10) and nut (11).

(d) Torque nut (11) to between 0.3 and 0.4 mdaN (26.54 and 35.38 lbf in).

(e) Safety nuts (11) with lockwire (Ref 20-21-13).

R (3) Connect rod assembly (1) to uplock (Ref. Detail F).

R (a) Insert bolt (3) ensuring it is fitted from the
R lower face of the clevis of the uplock assembly.

(b) Install nut (2) to the bolt (3).

R (4) Connect rod (4) to lever (5) (Ref. Detail E).

(a) Insert bolt (12).

NOTE: Check Ultimate Emergency control clearance by placing a 23 mm (0.905 in) spacer between Emergency control travel and lever stops.
If necessary, adjust rod (4).

(b) Install nut (14).

(5) Remove cap, connect electrical connector.

(6) Connect hydraulic lines.

(7) Tighten elbow unions.

(8) Tighten hydraulic line unions.

(9) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(10) Remove hydraulic fluid container.

(11) Remove safety collars.

(12) Remove safety clips and tags and reset circuit breakers.

(13) Pressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(14) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(16) Close gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(17) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(18) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) De-energize the aircraft electrical network.

(20) With gear doors locked and closed, with zero pressure in the jack, check dimension 'B' between the door stop and the structure stop (Ref. Fig. 401, Detail C).

(21) Check dimension 'A' (distance by which collar protrudes from hook lower jaw) and if necessary, adjust eccentrically to obtain dimension 'A' noted
R prior to removal (Ref. Fig. 401, Detail G).

(22) Remove access platforms.

F. Tests

R (1) Carry out several Landing Gear Door Ground Manoeuvre
R Tests by operating handle located on the LH main gear leg.

R **ON A/C 007-007

R (2) Carry out a Functional Test of main landing gear
R normal extension and retraction system (Ref. 32-31-00,
R Config. 01, Adjustment/Test).

R **ON A/C 001-006

R (2) Carry out a Functional Test of main landing gear
R normal extension and retraction system (Ref. 32-31-00,
R Config. 02, Adjustment/Test).

R (3) Carry out an Ultimate Emergency Extension - Main
R Landing Gear and Door Functional Test (Ref. 32-33-00,
R Adjustment/Test).

R (4) Check the replacement component for leakage, when pressurizing Green and Yellow hydraulic systems and upon close-up of the various tests.

G. Close-Up

(1) Check fluid level in Green and Yellow Hydraulic tanks. Top up as required (Ref. 12-12-29).

(2) Disconnect electrical ground power unit.

(3) Close access doors.

(4) Remove warning notice from flight compartment.

3. Replace Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Circuit Breaker Safety Clips	
Access Platform 3.22 m (10 ft. 7 in.)	
Lockwire Dia 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Special Materials (Ref. 20-30-00, No.119)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(11) Install safety collars on door actuating jacks.

C. Remove (Ref. Fig. 402)

(1) Disconnect and cap electrical connector.

(2) Cut lockwire, remove screws (25) and remove protective cover (20).

(3) Fold back tabs of lock washers (22), remove nuts (21), remove screws (24). Retain lock washers (22) for re-installation.

(4) Remove microswitch.

D. Preparation of Replacement Component

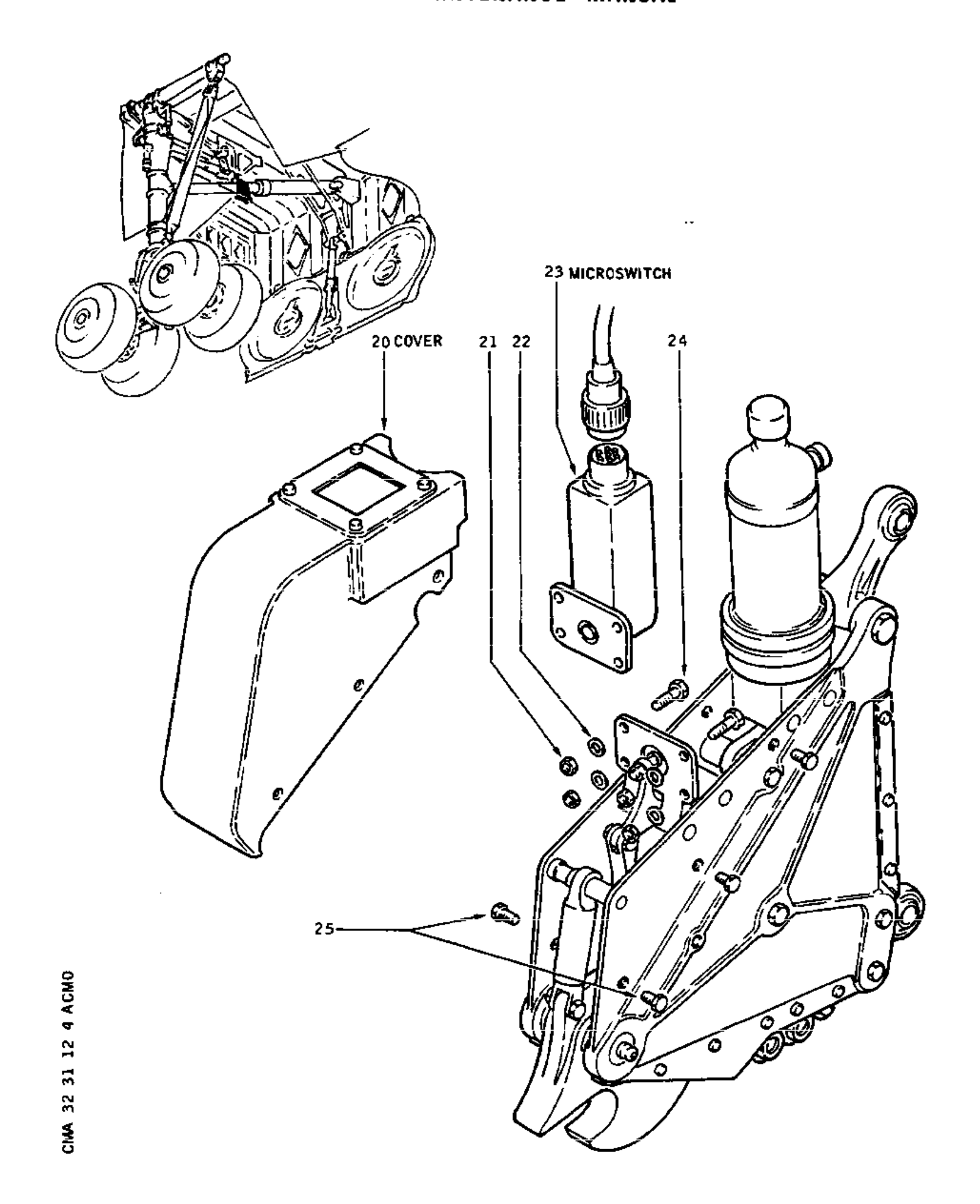
If a new microswitch is to be installed, prepare as follows :
- Apply product No.119 to the annular volume around plunger
- Install grease retaining membrane (supplied in special bag with microswitch).

E. Install

(1) Position microswitch and install using screws (24), lock washers (22) and nuts (21). Safety nuts (21) by folding back a lock washer tab.

(2) Install protective cover (20) using screws (25). Safety screws with lockwire (Ref. 20-21-13).

(3) Connect electrical connector.



Microswitch
Figure 402

F. Test

(1) Remove safety clips and tags and reset the circuit breakers.

(2) On First Officer's instrument panel, check on gears position indicating unit that the red indicator light corresponding to the replaced microswitch is illuminated.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove door actuating jack safety collars.

(3) Remove access platform.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(6) Close gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(10) Close access doors.

MAIN GEAR DOOR UPLOCK - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Check of hydraulic fluid level in uplock mechanical release damper.
Check of load required to release uplock in Ultimate Emergency
R Check door roller position in uplock box.

2. Check of Hydraulic Fluid Level

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.22 m (10 ft.7 in.)	
Safety Collars-Main Landing Gear Door Actuating Cylinder	D921317000
Hydraulic Fluid Container	
Lockwire, Dia. 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Hydraulic Fluid (Ref. 20-30-00, No.012)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Connect electrical ground power unit, and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) Open doors by means of operating handle located on LH main landing gear leg.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) Install safety collars on door actuating jacks.

C. Check (Ref. Fig. 601)

(1) Cut and remove lockwire, remove screw (1) retain washer (2) for reinstallation.

(2) Check that hydraulic fluid appears at level indication port.

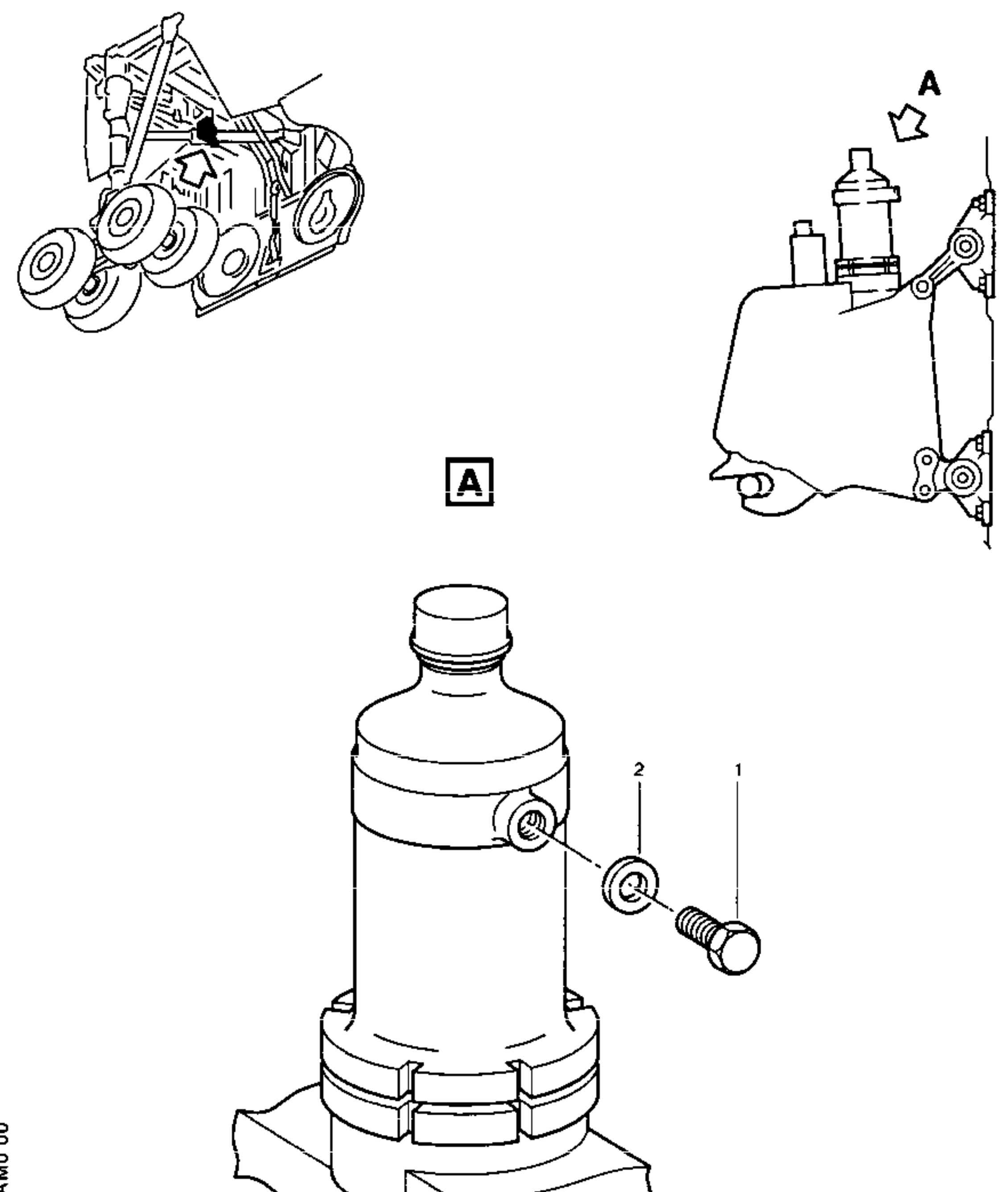
(3) If level of fluid is low add fluid Product No.012 until it begins to drip from level indication port.

(4) Install washer (2) and tighten screw (1). Safety screw with lockwire (Ref. 20-21-13).

D. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

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R Main Gear Door Uplock
Figure 601

(2) Remove safety collars from door actuating jacks.

(3) Pressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) Close doors by means of operating handle located on LH main gear leg.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit.

3. Check of Uplock Release Load

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.220 m (10 ft. 7 in.)	
Safety Collars - Main Landing Gear Doors - Actuating Cylinders	D921317000
Circuit Breaker Safety Clips	
Dynamometer	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

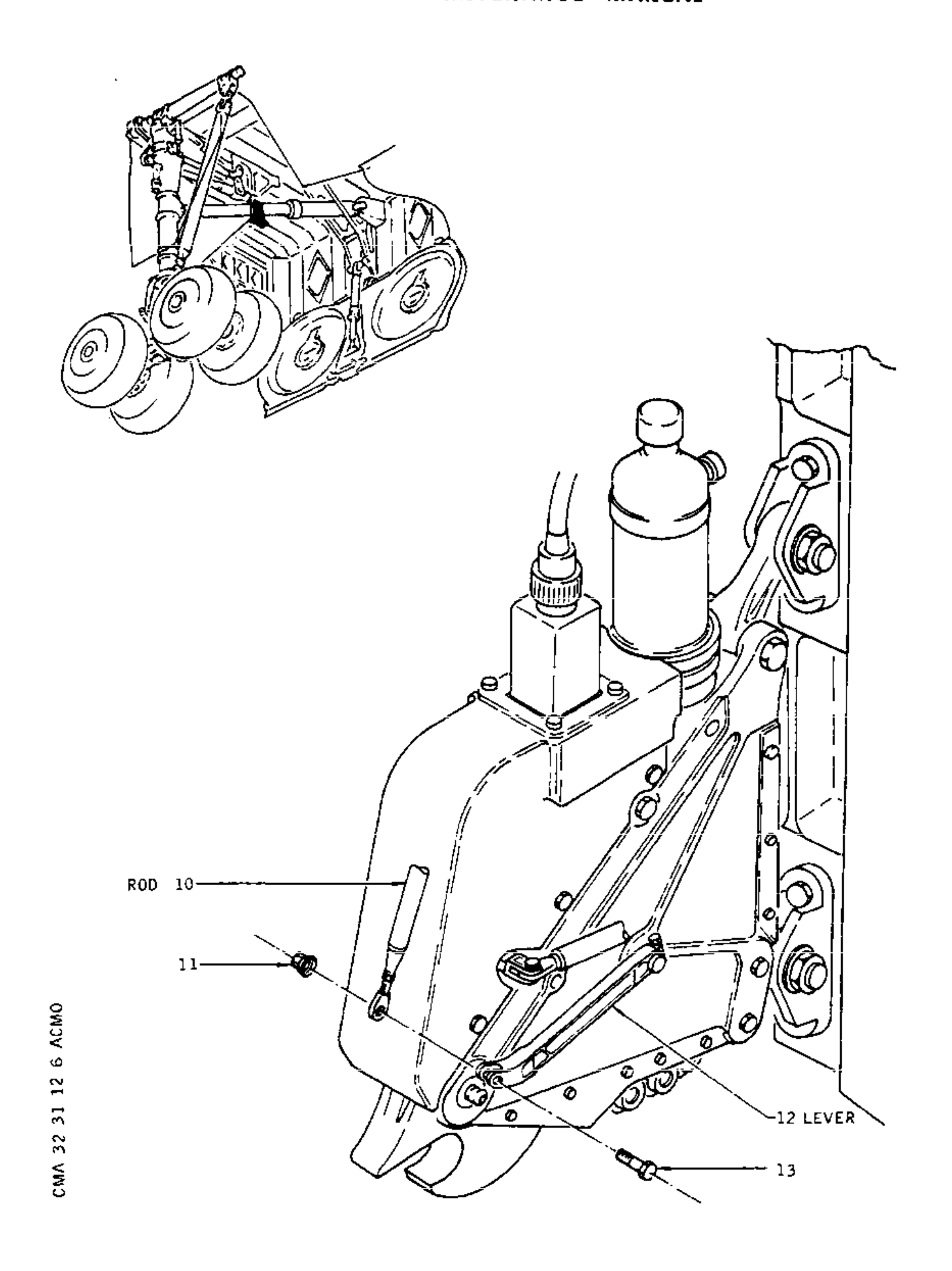
WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on LH main gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).



Uplock Release Control
Figure 602

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A6
UC SELECTOR RAISE CONT	15-215	G 2	A7
UC LOWER DOORS OPEN SUP	15-215	G 3	A8
UC SELECTOR OPEN SUP	15-215	G 4	A9

(11) Install safety collars on door actuating jacks

C. Check (Ref. Fig. 602)

(1) Disconnect Ultimate Emergency control rod (10) from lever (12).

(a) Remove nut (11) and bolt (13).

(2) Manually lock uplock hook.

(3) Connect dynamometer to lever (12) end-fitting and measure load required to release hook.
This load should be between 17 and 20 daN (38.2 and 45 lbf.).

(4) Manually open uplock hook.

D. Close-Up

(1) Connect rod (10) to lever (12).

(a) Install bolt (13) and nut (11). Tighten nut.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Remove safety collars from door actuating jacks.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Remove safety clips and tags and reset circuit brea-

kers.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Close doors by operating handle on LH main gear leg. Install locking cap.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(11) Close access doors.

B4. Lock Roller Engagement Check
B (Ref. Fig. 603)

B A. Equipment and Materials

DESCRIPTION	PART NO.
B Electrical Ground Power Unit	
B Access Platform 3.22 m (10 ft.7 in.)	
B Safety Collars-Main Landing Gear B Door Actuating Cylinder	D921317000
B Lockwire, Dia. 0.60 mm (0.024 in.) B (Corrosion Resistant Steel)	

B B. Prepare

B (1) Take the precautions described in the previous WARNING
B paragraph.

B (2) On First Officer's instrument panel, check that land-
B ing gear Normal control lever is in NEUTRAL position.

B (3) Connect electrical ground power unit, and energize the
B aircraft electrical network (Ref. 24-41-00, Servicing).

B (4) Pressurize Green hydraulic system (Ref. 29-11-00,
B Servicing).

B (5) On First Officer's instrument panel, place landing
B gear Normal control lever in DOWN position.

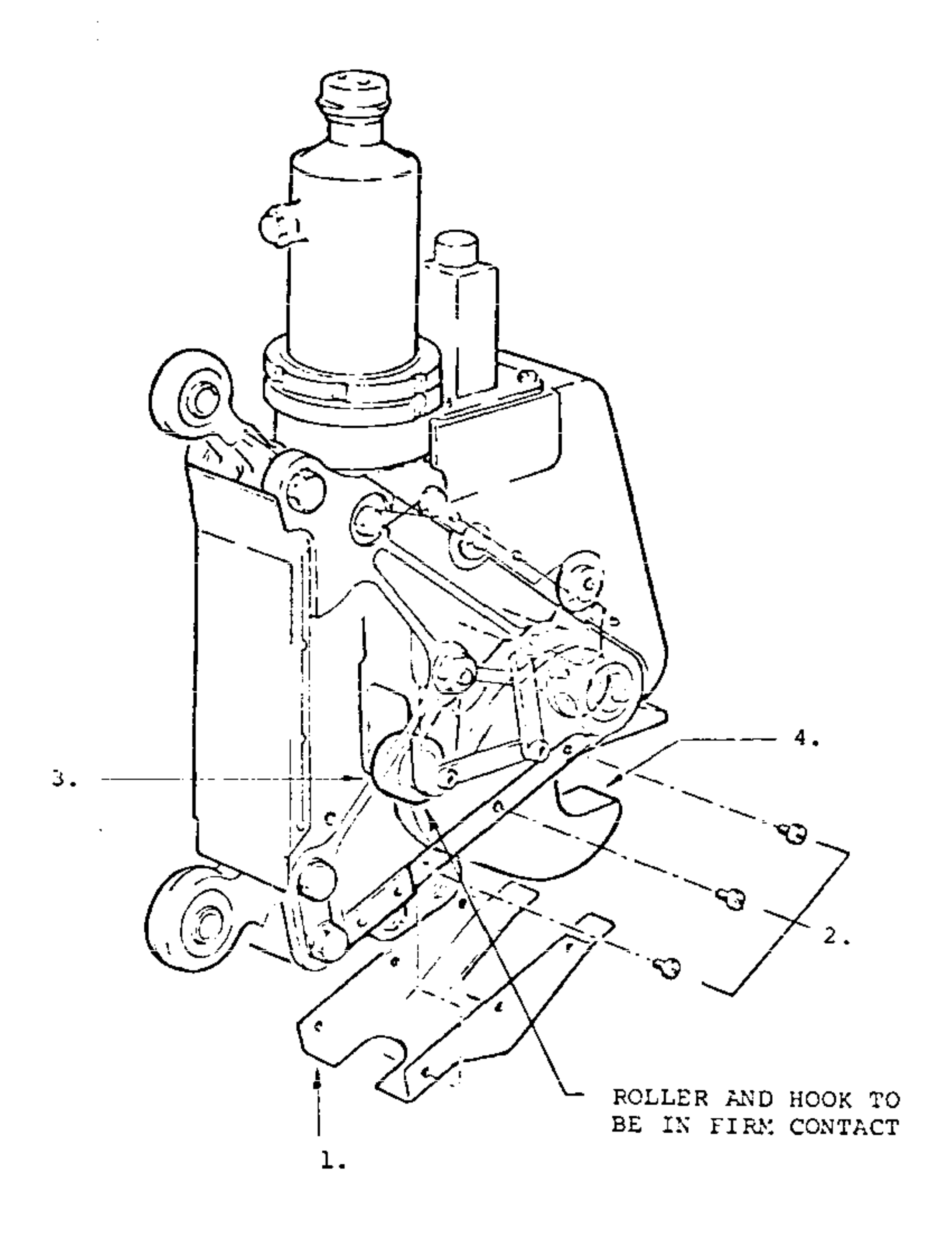
B WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE
B CLEAR.

B (6) Open doors by means of operating handle located on LH
B main landing gear leg.

B (7) On First Officer's instrument panel, place landing
B gear Normal control lever in NEUTRAL position.

B (8) Shut down and depressurize Green hydraulic system
B (Ref. 29-11-00, Servicing).

B (9) Install safety collars on door actuating jacks.



Main Gear Door Uplock
Figure 603

B

B C. Check (Ref. Fig. 603)

R WARNING: SHOULD IT BE NECESSARY TO DISTURB THE MANUAL
R UNLOCKING SYSTEM, CARRY OUT A DUPLICATE INSPECT-
R ION (REF. 05-55-11).

B (1) Remove cover (E75013200-002/101).

B (2) Remove cover (1) and screws (2), retain for reinstal-
B lation.

B (3) Manually trip the lock into the locked position by
B inserting a suitable bar between the lock jaws and
B levering to the closed position.

B (4) Check that the lock-roller (3) is in firm contact with
B the hook (4).

B NOTE: A simple way of checking this is to rock the
B hook through its small range of free play and
B to observe that the roller starts to rotate.

B (5) If the roller is found not to be in contact with the
B hook the up-lock assembly should be changed.

B (6) Operate the manual unlocking lever to return the lock
B to the unlocked position.

R NOTE: To ensure total return of lock mechanism to the
R unlocked position, hydraulic pressure is
R required.

B (7) Refit the cover (1) and the screws (2), wire locking
B as necessary.

B (8) Refit cover.

B D. Close-up

B (1) Make certain that working area is clean and clear of
B tools and miscellaneous items of equipment.

B (2) Remove safety collars from door actuating jacks.

B (3) Pressurize the Green hydraulic system (Ref. 29.11.00,
B Servicing).

B (4) On first officer's instrument panel, place landing g
B gear Normal control lever in DOWN position.

B WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE
B CLEAR.

B (5) Close doors by means of operating handle located on LH
B main gear leg.

B (6) On First Officer's instrument panel, place landing
B gear Normal control lever in NEUTRAL position.

B (7) Shut down and depressurize Green hydraulic system
B (29-11-00, Servicing).

B (8) De-energize the aircraft electrical network (Ref.
B 24-41-00, Servicing) and disconnect electrical ground
B power unit.
R
R

MAIN GEAR DOOR ACTUATING JACK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITION OF NOSE AND MAIN GEAR DOORS CORRESPONDS WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main door of each main landing gear is actuated by a hydraulic jack.
The door actuating jack body is hinged on the landing gear bay centre supports by means of a cross bar.
The actuating jack rod end-fitting hinges in the fork fitting mounted on the main door.
A microswitch mounted on the lower part of the actuating jack body prevents landing gear retraction if main landing gear main doors are not fully open.

2. Main Landing Gear Door Actuating Jack

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
Blanking Plugs/Caps	
Lockwire - Dia. 0.028 in. (0.7 mm) (Corrosion Resistant Steel)	
Circuit Breaker Safety Clips	
Access Platform 3.220 m (10 ft.7 in.)	
Spanner Adapter - Main Landing Gear Door Jack Locknut	D925430000
Container	
Multimeter	
Depth Gauge	
Common Grease (Ref. 20-30-00, No.051)	
Special Materials (Ref. 20-30-00, No.147)	
Safety Sleeve - Nose Landing Gear Doors	E925002000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open gear doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, position landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in the flight compartment.

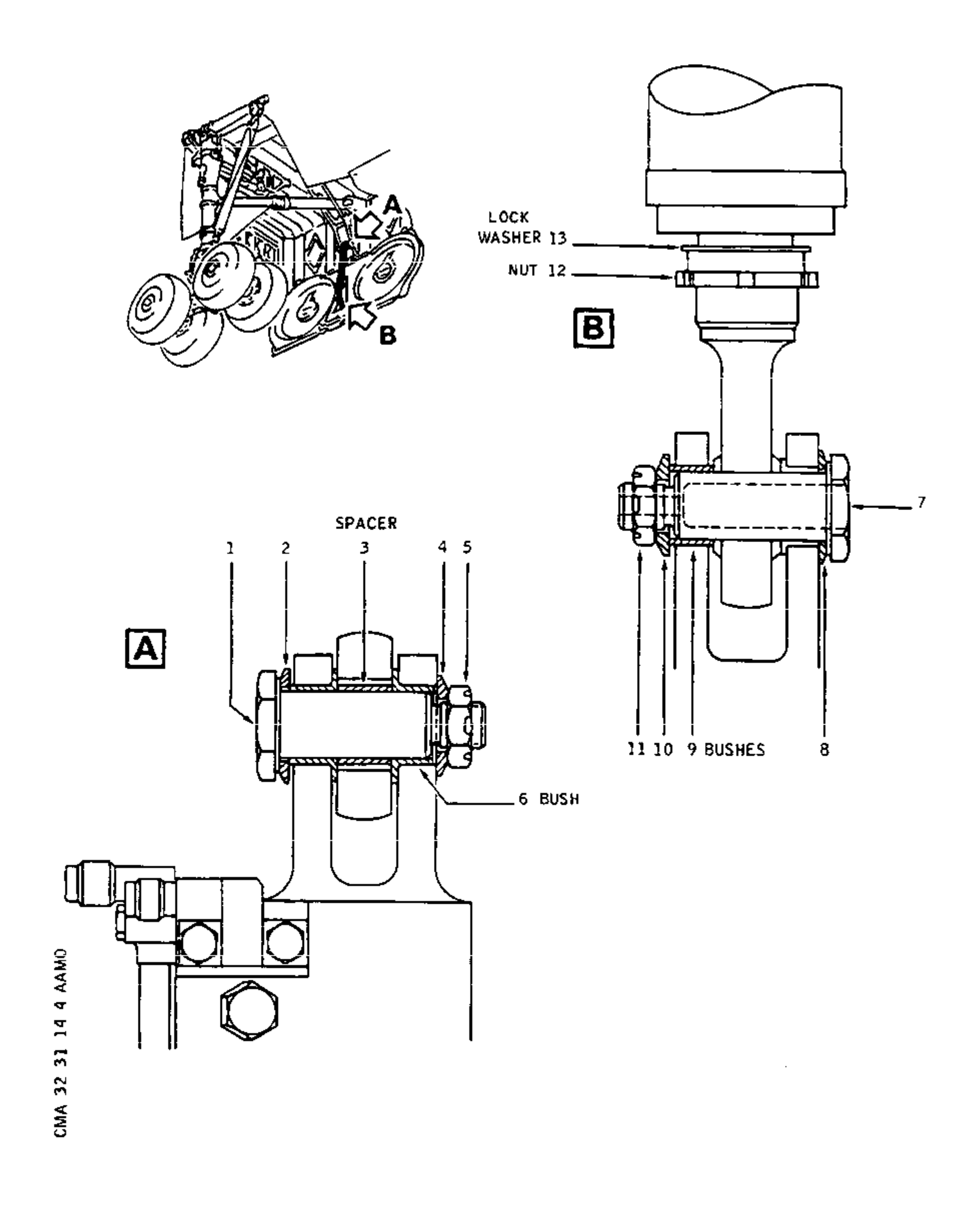
(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(14) Install safety sleeves and collars (Do not install safety collar on door actuating jack to be removed).

C. Remove
(Ref. Fig. 401)

(1) Disconnect and cap electrical connector.



Main Landing Gear Door Actuating Jack
Figure 401

(2) Disconnect hydraulic lines, on actuating jack side.

NOTE : Blank off lines and actuating jack ports with blanking plugs/caps.

(3) On actuating jack lower section :

(a) Remove cotter pin and nut (11).

(b) Remove bolt (7), washers (10) and (8) and bush (9).

(4) On actuating jack upper section :

(a) Remove cotter pin and nut (5).

(b) Remove bolt (1) and washer (4) and (2).
Remove actuating jack.

NOTE : Note position of washers. Spacer (3) must remain in position on the cross bar.

RB (c) Perform detailed inspection and NDT inspection
RB technique K57-U-41 on structure bracket.

D. Preparation of Replacement Component

(1) Lower end-fitting

(a) Loosen nut (12). Remove rod end-fitting from replacement actuating jack.

(b) Coat rod end-fitting thread with product No.147 (Ref. 20-30-00).

(c) Install end-fitting on actuating jack rod with lock washer (13) and nut (12).

(d) Fully extend actuating jack and maintain in this position.

(e) Adjust rod end-fitting to achieve actuating jack end-fitting centre-to-centre distance, rod fully extended, of 1374.67 mm (54.120 in.)

(f) Position lock washer (13).

(g) Tighten nut (12).
Torque to between 1080 and 1200 lbf.in. (12.202 and 13.558 m.daN).

(h) Safety nut (12) with lockwire (Ref. 20-21-13).

(2) Upper end-fitting

(a) Lubricate the two bushes (6) with product No.051 and install them in replacement actuating jack fork end-fitting.

(b) Remove protective cover from hydraulic lines on removed actuating jack and install on replacement actuating jack.

E. Install

(1) Upper end-fitting

NOTE : Make certain spacer (3) is in position in cross bar bore.

(a) Position actuating jack upper fork end-fitting complete with bushes (6) on the cross bar.

(b) Install washer (2) under bolt (1) head.

(c) Lubricate bolt (1) with product No.051 and install bolt (1).

(d) Install washer (4) and nut (5). Torque nut (5) to 1 m.daN (88.507 lbf.in.) and safety with a cotter pin.

(2) Lower end-fitting

(a) Position actuating jack rod end-fitting in door fork fitting.

(b) Install washer (8) under bolt (7) head.

(c) Lubricate bolt (7) with product No.051 and install bolt (7).

NOTE : Make certain that bolt (7) head is located on same side as fork end-fitting integral bush.

(d) Install bush (9), washer (10) and nut (11). Torque nut (11) to 1 m.daN (88.507 lbf.in.) and safety with a cotter pin.

(3) Remove blanking plugs and connect aircraft hydraulic lines to actuating jack.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE. IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(4) Remove cap and connect electrical connector.

(5) Install safety collar on door replacement actuating jack.

F. Test

(1) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(3) On centre console, place landing gear and door Emergency control lever in DOORS position.

(4) Check replacement actuating jack for leakage.

(5) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(6) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(7) Make certain that the following circuit breaker is tripped, safetied and tagged :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(8) Open access door 123AB. On relay box 2-123, check for continuity between terminal B on test connector UT 1837-9 and ground. Restore relay box to normal condition and close access door 123AB.

(9) Pressurize Green hydraulic system using hydraulic ground power unit (Ref. 29-11-00, Servicing).

(10) Remove safety clips and tags and reset the circuit breakers:

(11) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(12) Remove safety collar.

(13) Place gear door operating handle located on LH main landing gear leg in close position. Check that doors uplock correctly then place handle in open position.

NOTE : Adjust hydraulic pressure to achieve slow door closing and opening.

(14) If doors do not uplock correctly adjust length of actuating jack and repeat test of door uplocking.

NOTE : Repeat this procedure until actuating jack required length is obtained and door uplocks correctly. If actuating jack is adjusted torque nut (12) to specified value and safety with lockwire upon completion of adjustment.

WARNING : PRIOR TO EACH ADJUSTMENT REQUIRED, INSTALL SAFETY COLLAR AND DEPRESSURIZE GREEN HYDRAULIC SYSTEM (REF. 29-11-00, SERVICING).

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Install safety collar.

(17) Check door actuating jack for leakage.

(18) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain in particular that no trace of hydraulic fluid remains.

(2) Remove container.

(3) Remove safety sleeves and collars.

(4) Remove access platform.

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Close landing gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Check fluid level in Green and Yellow hydraulic tanks Top up as required. (Ref. 12-12-29).

(11) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(12) Close access doors.

(13) Remove warning notice from flight compartment.

3. Replace Microswitches

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
Safety Sleeve - Nose Landing Gear Doors	E925002000
Circuit Breaker Safety Clips	
Access Platform 1.80 m (5 ft. 11 in.)	
Lockwire - Dia. 0.028 in. (0.7 mm). (Corrosion Resistant Steel)	
Special Materials (Ref. 20-30-00, No. 119)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open landing gear doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Install safety sleeves and collars on door actuating jacks.

(11) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	15-215	G 4	A 9

C. Remove (Ref. Fig. 402)

(1) Disconnect and cap electrical connector.

(2) Cut lockwire and remove screws (20). Retain washers (21) for reinstallation. Remove microswitch.

(3) Retain buffer plate (22), shims (23) and balls (24) for reinstallation.

WARNING : DO NOT REMOVE BUSH (25).

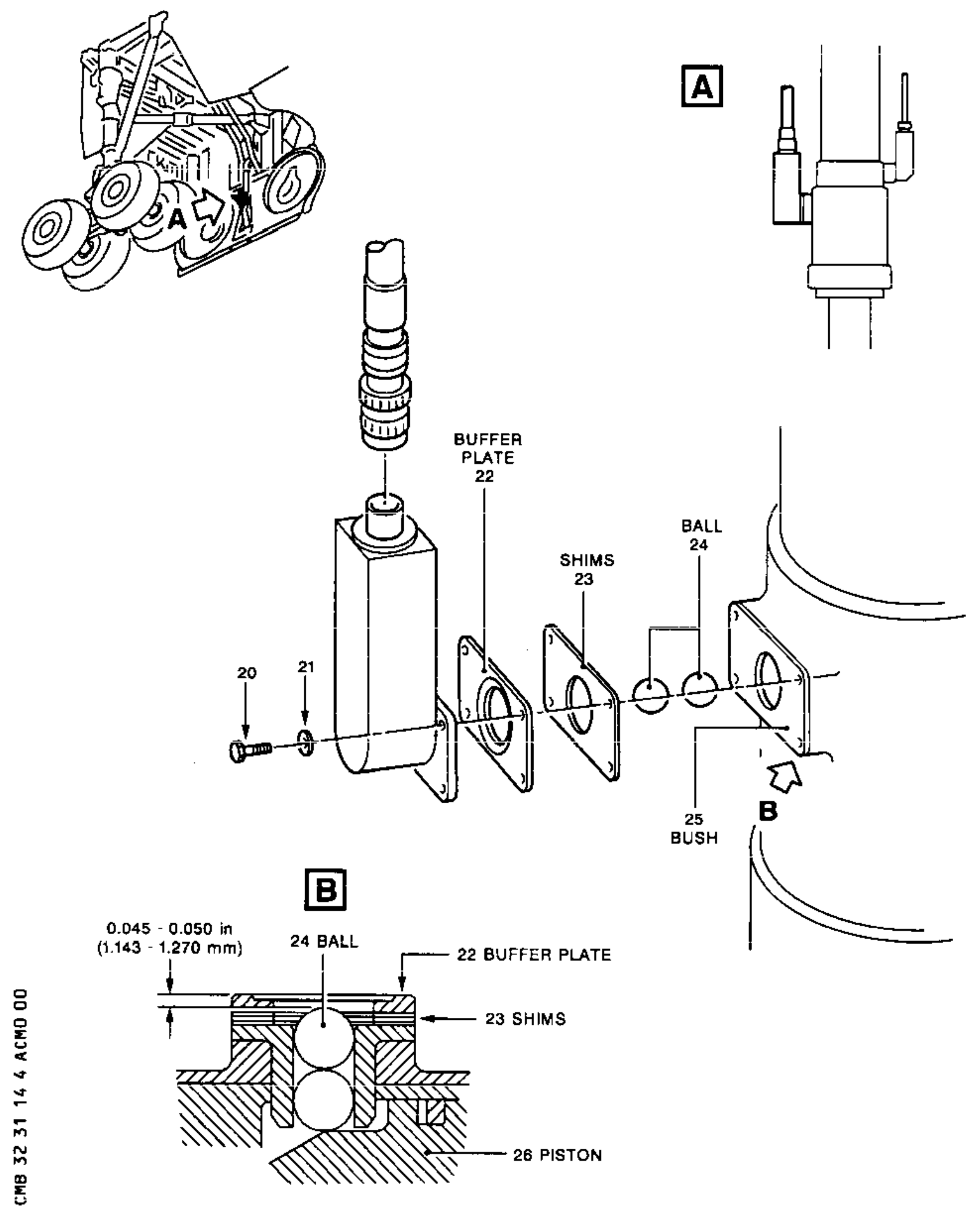
D. Preparation of Replacement Component

If a new microswitch is to be installed, prepare as follows:
- Apply product No.119 to the annular volume around plunger.
- Install grease retaining membrane (supplied in special bag with microswitch).

E. Install

(1) Remove safety collar from door actuating jack concerned. Close door so as to retract piston (26). Maintain door in this position.

(2) Install balls (24), shims (23) and buffer plate (22).



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R

Microswitch
Figure 402

WARNING: RECESS IN BUFFER PLATE (22) MUST FACE MICROSWITCH.

(3) Make certain that dimension between upper face of ball (24) and outer face of buffer plate (22) is between
R 0.045 and 0.050 in (1.143 and 1.270 mm).

(4) Open door. Install safety collar.

(5) Install microswitch using screws (20) and washers (21). Wirelock screws (20) in pairs (Ref. 20-21-13).

(6) Connect electrical connector.

F. Test

(1) Test microswitch 1G20 or 2G20.

(a) Make certain that circuit breaker G4 is tripped.

(b) Make certain that there is continuity between terminal B of test connector UT1837-9 and aircraft ground (Access door 123AB, relay box 2-123).

(c) Restore relay box to normal operating condition and close door 123AB.

(d) Remove safety clip and tag and reset circuit breaker G4.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove safety sleeves and collars.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) Close landing gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit. (Ref. 24-41-00, Servicing).

(9) Close access doors.

MAIN GEAR DOOR ACTUATING JACK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main door of each main landing gear is actuated by a hydraulic jack.

The door actuating jack body is hinged on the landing gear bay centre supports by means of a cross bar.

The actuating jack rod end-fitting hinges in the fork fitting mounted on the main door.

Two microswitches are mounted on the lower part of the actuating jack body. One microswitch prevents landing gear retraction if main landing gear main doors are not fully open. The other microswitch serves to indicate failure of the door opening sequence during landing gear retraction.

2. Main Landing Gear Door Actuating Jack

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

DESCRIPTION	PART NO.
Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
Spanner Adapter - Main Landing Gear Door Jack Locknut	D925430000
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	
Access Platform 3.22 m (10 ft. 7in.)	
Lockwire - Dia 0.028 in. (0.7 mm) (Corrosion Resistant Steel)	
Snapwire - Dia 0.020 in. (0.5 mm)	
Container	
Depth Gauge	
Multimeter	
Common Grease (Ref. 20-30-00, No 051)	
Special Materials (Ref. 20-30-00, No.147).	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Open doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, Safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in the flight compartment.

(12) De-pressurize Green and Yellow hydraulic systems. (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) De-pressurize Green and Yellow hydraulic system tanks. (Ref. 29-13-00, Servicing).

(14) Install safety collar on actuating jack to remain in position.

C. Remove (Ref. Fig. 401)

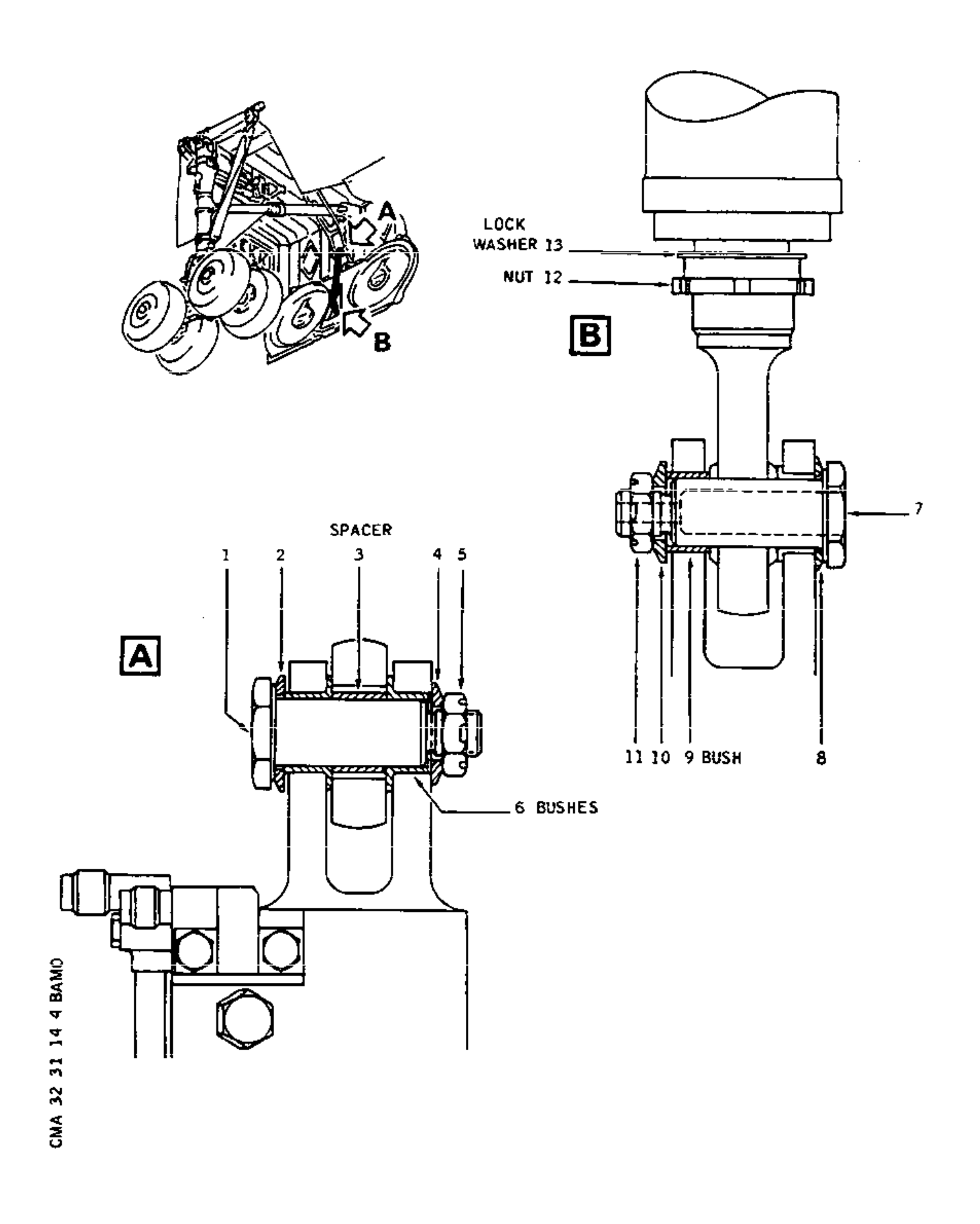
(1) Disconnect and cap electrical connectors.

(2) Disconnect hydraulic lines on actuating jack. Blank off lines and actuating jack ports.

(3) On actuating jack lower section :

(a) Remove cotter pin and nut (11).

(b) Remove bolt (7), washers (10) and (8) and bush (9).



Main Landing Gear Door Actuating Jack
Figure 401

(4) On actuating jack upper section :

(a) Remove cotter pin and nut (5)

(b) Remove bolt (1) and washers (4) and (2). Remove actuating jack.

NOTE : Note position of washers. Spacer (3) must remain in position on the cross bar.

RB (c) Perform detailed inspection and NDT Inspection
RB Technique K57-U-41 on structure bracket.

D. Preparation of Replacement Component

(1) Lower end-fitting

(a) Loosen nut (12). Remove rod end-fitting from replacement actuating jack.

(b) Coat rod end-fitting thread with Product No.147 (Ref. 20-30-00).

(c) Install end-fitting on actuating jack rod with lock washer (13) and nut (12).

(d) Fully extend actuating jack and maintain in this position.

(e) Adjust rod end-fitting to achieve actuating jack end-fitting centre-to-centre distance, rod fully extended, of 1374.67 mm (54.120 in.)

(f) Position lock washer (13).

(g) Tighten nut (12).
Torque to between 1080 and 1200 lbf.in. (12.202 and 13.558 m.daN).

(h) Safety nut (12) with lockwire (Ref. 20-21-13).

(2) Upper end-fitting

(a) Lubricate the two bushes (6) with product No.051 and install them in replacement actuating jack fork end-fitting.

(b) Remove protective cover from hydraulic lines on removed actuating jack and install on replacement actuating jack.

E. Install

(1) Upper end-fitting.

NOTE : Make certain spacer (3) is in position in cross bar bore.

(a) Position actuating jack upper fork end-fitting complete with bushes (6) on the cross bar.

(b) Install washer (2) under bolt (1) head.

(c) Lubricate bolt (1) with product No.051 and install bolt (1).

(d) Install washer (4) and nut (5). Torque nut (5) to 1 m.daN (88.507 lbf.in.) and safety with a cotter pin.

(2) Lower end-fitting.

(a) Position actuating jack rod end-fitting in door fork fitting.

(b) Install washer (8) under bolt (7) head.

(c) Lubricate bolt (7) with product No.051 and install bolt (7).

NOTE : Make certain that bolt (7) head is located on same side as fork end-fitting integral bush.

(d) Install bush (9), washer (10) and nut (11). Torque nut (11) to 1 m.daN (88.507lbf.in.) and safety with a cotter pin.

(3) Remove blanking plugs and connect aircraft hydraulic lines to actuating jack.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE. IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(4) Remove caps and connect electrical harnesses.
NOTE : As connectors are not polarized, ensure that harness from micro switch G20-1 is connected to G20-A and the harness from G20-2 to G20-B respectively.

(5) Install safety collar on door replacement actuating jack.

F. Test

(1) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(3) On centre console, place landing gear and door Emergency control lever in DOORS position.
- The nose landing gear doors open.

(4) Check replacement actuating jack for leakage.

(5) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(6) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(7) Make certain that circuit breaker G4 is tripped.

(8) Open access door 123AB. On relay box 2-123, check for continuity between terminal B on test connector UT 1837-9 and ground. Close access door 123AB.

(9) Make certain that landing gear and shortening mechanism safety devices are in position.

(10) Make certain that Green and Yellow hydraulic systems are depressurized.

(11) On First Officer's instrument panel, push PRESS push-button on O/RIDE and place landing gear Normal control lever in UP position.

(12) Remove safety collar from replacement actuating jack.

(13) Remove safety clips and tags and reset the circuit breakers.

(14) Manually close and open landing gear door associated with replacement actuating jack.

(a) On Flight Engineer's panel, on FAULT ANNUNCIATOR, the Yellow LH or RH (MAIN DOORS) indicator light, corresponding to replacement actuating jack illuminates during the period of door closing.

(15) Install safety collar.

(16) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(17) Restore O/RIDE to initial position and safety with snapwire 0.020 in. (0.5 mm) (Ref. 20-26-13).

(18) Pressurize Green hydraulic system using hydraulic ground power unit (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(19) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.
- Nose gear doors close.

(20) Remove safety collar.

(21) Remove locking cap and place gear door operating handle located on LH main landing gear leg in close position. Check that doors uplock correctly then place handle in open position.

NOTE : Adjust hydraulic pressure to achieve slow door closing and opening.

(22) If doors do not uplock correctly adjust length of actuating jack and repeat test of door uplocking.

NOTE : Repeat this procedure until actuating jack required length is obtained and door uplocks correctly. If actuating jack is adjusted, torque nut (12) to specified value and safety with lockwire upon completion of adjustment.

WARNING : PRIOR TO EACH ADJUSTMENT REQUIRED, INSTALL SAFETY COLLAR AND DEPRESSURIZE GREEN HYDRAULIC SYSTEM (REF. 29-11-00, SERVICING).

(23) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(24) Install safety collar.

(25) Check replacement actuating jack for leakage.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(2) Remove container.

(3) Remove safety collars. Remove access platform.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) Remove locking cap and close doors by operating handle located on LH main gear leg. Install locking cap.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) Top up hydraulic tanks as required (Ref. 12-12-29).

(10) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(11) Close access doors and remove warning notice from flight compartment.

3. Replace Microswitches

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main landing Gear Door-Actuating Cylinder	D921317000
Circuit Breaker Safety Clips	
Access Platform 1.80 m (5 ft. 11 in.)	
Snapwire 0.020 in. (0.5 mm)	
Lockwire - Dia 0.028 in. (0.7 mm) (Corrosion Resistant Steel)	
Special Materials (Ref. 20-30-00, No. 119)	

B. Prepare

NOTE : As the microswitches are identical only one removal is described in this topic.

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Install safety collars on door actuating jacks.

(11) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR RAISE CONT	15-215	G 2	A 7
UC SELECTOR LOWER CONT	15-215	G 4	A 9

C. Remove (Ref. Fig. 402)

(1) Disconnect and cap electrical connector.

(2) Cut lockwire and remove screws (20). Retain washers (21) for reinstallation and remove microswitch.

(3) Retain buffer plate (22), shims (23) and balls (24) for reinstallation.

WARNING : DO NOT REMOVE BUSH (25)

D. Preparation of Replacement Component

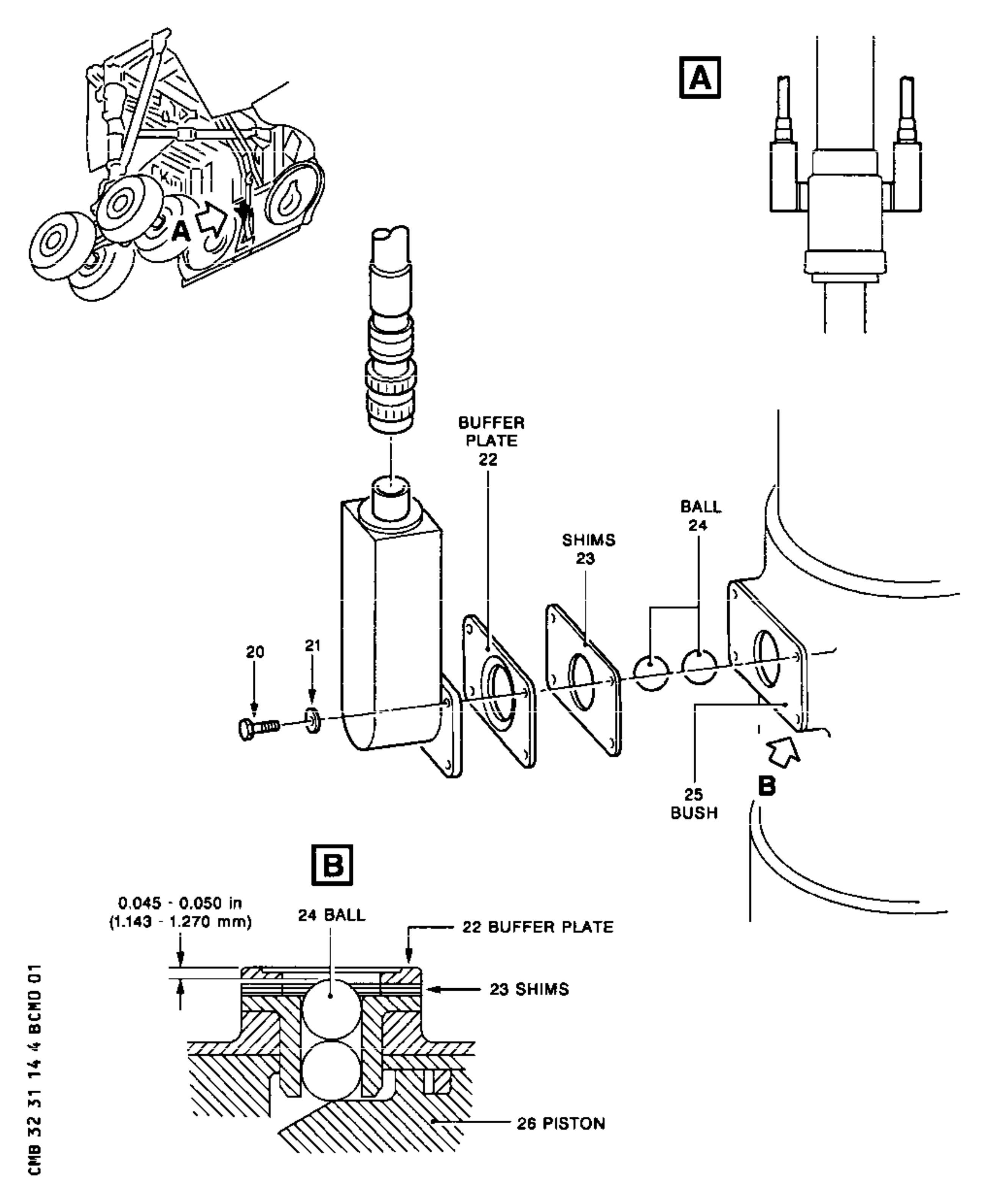
If a new microswitch is to be installed, prepare as follows:
- Apply product No.119 to the annular volume around plunger
- Install grease retaining membrane (supplied in special bag with microswitch).

E. Install

(1) Remove safety collar from door actuating jack concerned. Close door so as to retract piston (26). Maintain door in this position.

(2) Install balls (24), shims (23) and buffer plate (22).

WARNING : RECESS IN BUFFER PLATE (22) SHALL FACE MICROSWITCH.



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R

Microswitch
Figure 402

(3) Make certain that dimension between upper face of ball (24) and outer face of buffer plate (22) is between
R 0.045 and 0.050 in (1.143 and 1.270 mm).

(4) Open door. Install safety collar.

(5) Install microswitch using screws (20) and washers (21). Wirelock screws (20) in pairs (Ref. 20-21-13).

(6) Connect electrical connector.

F. Test

(1) Test of microswitch 1G20 or 2G20.

(a) Make certain that circuit breaker G4 is tripped.

(b) Make certain that there is continuity between terminal B of test connector UT1837-9 and aircraft ground (Access door 123AB, relay box 2-123).

(c) Restore relay box to normal operating condition and close door 123AB.

(d) Remove safety clip and tag and reset circuit breakers G2 and G4.

(2) Test of microswitch 1G20-2 or 2G20-2.

WARNING: MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED AND THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(a) On First Officer's instrument panel, place landing gear Normal control lever in UP position by breaking snapwire on O/RIDE PRESS pushbutton guard and pushing PRESS pushbutton.

(b) Remove safety collar from door actuating jack concerned.

(c) Manually close and open corresponding door.

- On Flight Engineer's panel, on FAULT ANNUNICATOR, Yellow LH or RH (MAIN DOORS) indicator light corresponding to door concerned illuminates during the period of door closing.

(d) Install safety collar.

(e) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(f) Restore O/RIDE to initial position and safety with snapwire 0.020 in (0.5 mm) (Ref. 20-26-13).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove safety collars.

(3) Pressurize Green Hydraulic system (Ref. 29-11-00, Servicing).

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) Remove locking cap and close doors by operating handle located on LH main gear leg. Install locking cap.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-11-00, Servicing).

(9) Close access doors.

MAIN GEAR UPLOCK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A main gear uplock is mounted in the upper part of each main landing gear bay.
Each uplock is equipped with an uplock hook. This hook serves to hold the main landing gear in the uplocked position.
Hook locking is mechanical, uplock release is hydraulic. Each uplock is equipped with a microswitch.

2. Main Gear Uplock

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183 621 lbf.)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000

DESCRIPTION	PART NO.
Pyramid Adapter - Lifting, RH	D924008001
Jacking Pad - Nose	D925370000
Safety Stay	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Access Platform	
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Blanking Plugs/Caps	
Container	
Circuit Breaker Safety Clips	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Position safety barriers prohibiting access to gear and door travel ranges.

(6) Make certain that visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(8) Connect hydraulic ground power unit to Green hydraulic

system.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) Remove locking cap and open gear doors by operating handle located on LH main landing gear leg.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(15) Display a warning notice in the flight compartment prohibiting use of landing gear Normal control lever.

(16) Position safety collars on main gear door actuating jacks.

(17) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(18) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(19) Not applicable.

C. Remove
(Ref. Fig. 401)

(1) Disconnect electrical plug from microswitch (12) and cap.

(2) Detach electrical loom from uplock.

(3) Disconnect hydraulic lines.

(4) Disconnect Ultimate Emergency control rod (17) from control lever (13).

(a) Remove nut (14).

(b) Retain washer (15)

(c) Remove bolt (16)

(5) Disconnect brace rod (8) and uplock.

(a) Remove nut (6)

(b) Retain washer (7) for reinstallation.

(c) Remove bolt (18)

(6) On the uplock

(a) Fold back tab of lock washers (4) and remove nuts (5).

(b) Retain washers (3) and lock washers (4) for reinstallation.

(c) Remove bolts (1).

(d) Remove uplock.

(7) Cap open hydraulic line ends.

D. Preparation of Replacement Component

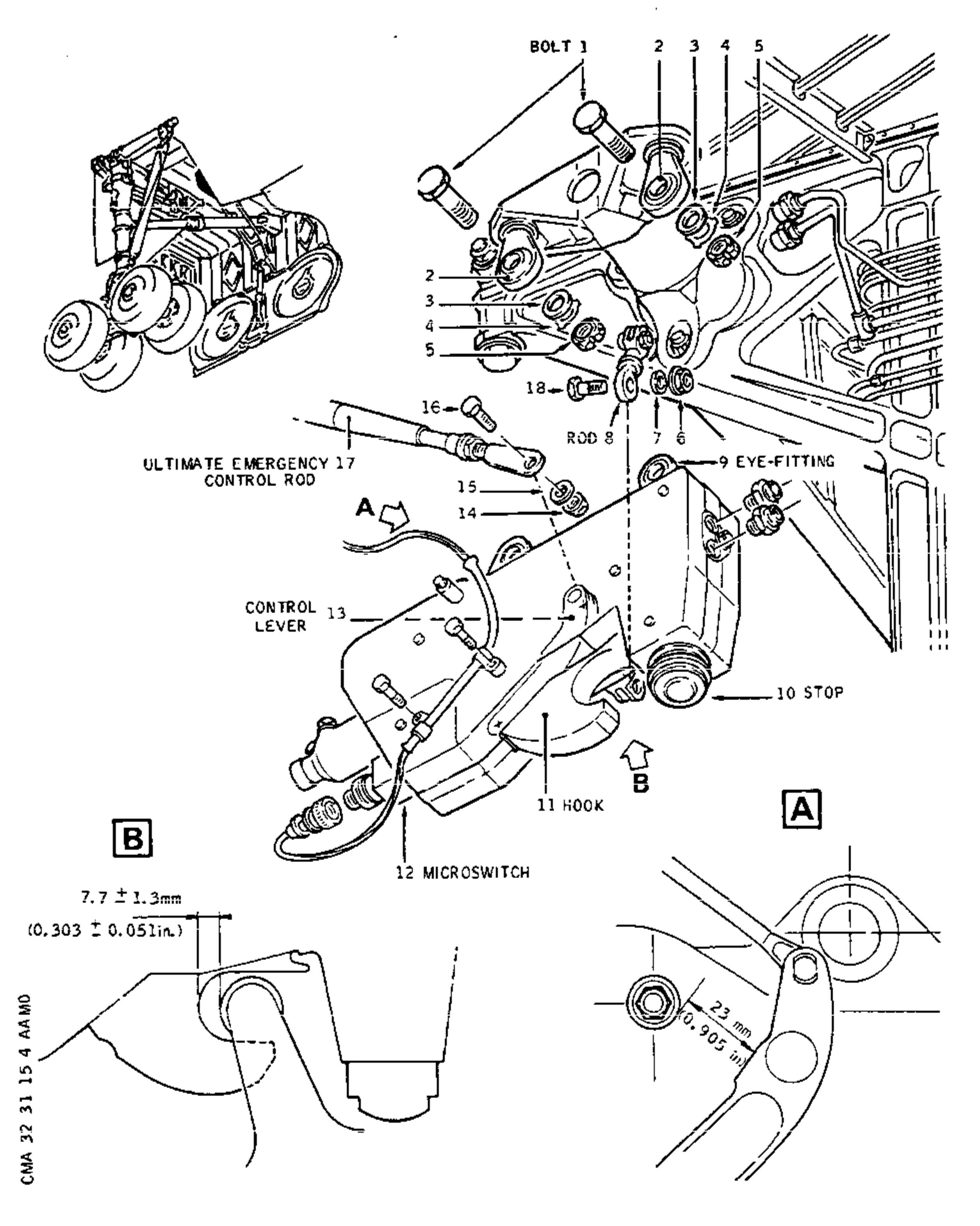
NOTE : The uplock is filled with Product No.011 (Ref. 20-30-00).

(1) The replacement component is not fitted with couplings. Take them from the removed component and replace seals before installation.

(2) Check that the dimension between replacement uplock fork fitting (9) bore axis, and the end of its stop (10) in extended position is 262 mm (10.315 in.).

E. Install

(1) Remove caps from hydraulic lines.



Main Gear Uplock
Figure 401

(2) Offer up and install uplock.

NOTE : Make certain that bushes (2) are in position.

(a) Insert bolts (1).

(b) Install washers (3) and lock washers (4).

(c) Install and tighten nuts (5). Torque to between 2 and 4 m.daN (14.751 and 29.502 lbf.ft.).

(d) Safety nuts (5).

(3) Connect brace rod (8) to uplock.

(a) Insert bolt (18).

(b) Install washer (7).

(c) Install and tighten nut (6). Torque to between 1 and 3 m.daN (7.375 and 22.126 lbf.ft.).

(4) Connect Ultimate Emergency control rod (17) and control lever (13).

(a) Insert bolt (16).

NOTE : Check by means of close tolerance spacer that the distance between the end of travel stop and lever stop (13) is 23 mm (0.905 in.). Adjust length of control rod (17) if necessary.

(b) Install washer (15).

(c) Install nut (14).

(5) Connect hydraulic lines.

(6) Install electrical loom on uplock and connect electrical plug to microswitch.

(7) Pressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(8) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

(9) If both main landing gears are to be retracted remove

landing gear and shortening mechanism safety devices.

After SB 32-007 For A/C 002-002,

(10) Not applicable.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(12) Not applicable.

(13) On First Officer's intrument panel, place landing gear Normal control lever in UP position. Adjust hydraulic ground power unit delivery to allow a slow retraction of gears.

(14) When retracted, make certain that gears are locked.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

**ON A/C 007-007,

(17) Check that roller and uplock axes are aligned. Permitted misalignment of roller is 0 ± 3 mm (0 ± 0.118 in.). Adjust brace rod (8) if necessary.

(17) Check that roller and uplock axes are aligned. Permitted misalignment of roller is 0 ± 3 mm (0 ± 0.118 in.). Adjust brace rod (8) if necessary.

B NOTE : Ensure that the clearance between the uplock
B and the uplock roller support arm is greater
B than 10.5 mm on each side.

(18) Make certain that the dimension between the interior of hook (11) and the roller is 7.7 ± 1.3 mm (0.303 ± 0.051 in.).
If dimension is out of tolerance refer to para. 3.

(19) Remove safety clips and tags and reset the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(20) Pressurize Green hydraulic system and maintain a pressure of 275 bars (3988 psi) (Ref. 29-11-00, Servicing).

(21) Check that uplock roller is in contact with upper part of hook (11) without moving the latter.

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(22) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(23) With landing gear downlocked, shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing)

(24) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(25) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(26) If both main gears were retracted, install landing gear and shortening mechanism safety devices.

After SB 32-007 For A/C 002-002,

(27) Not applicable.

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(28) Not applicable.

(29) Not applicable.

(30) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(31) Remove safety collars.

(32) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(33) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(34) Close gear doors, by operating handle located on LH main landing gear leg. Install locking cap.

(35) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(36) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Tests

(1) Carry out a Normal landing gear retraction and extension sequence (Ref. 32-31-00, Adjustment/Test).

(2) Carry out an Emergency landing gear extension sequence (Ref. 32-32-00, Adjustment/Test).

(3) Check replacement component for leakage at first pressurization and upon completion of tests.

(4) Before closing access doors and panels, carry out a double inspection of work performed and area affected as per instructions detailed in 05-55-11.

G. Close-Up

(1) Disconnect hydraulic ground power unit.

(2) Check fluid level in Green and Yellow hydraulic system tanks.
Top up as required (Ref. 12-12-29).

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Close access doors.

(5) Remove safety barriers. Make certain that the area under the aircraft is clear.

(6) Remove safety stay.

(7) Lower the aircraft onto its wheels.

(8) Remove warning notice from flight compartment.

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3. Replacement of Uplock Structural Adjustment Bushes

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183 621 lbf.)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Safety Stay	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Access Platform 3.22 m (10 ft. 7 in.)	
Lockwire Dia 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	
Container	
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	
Safety Barriers	
**ON A/C ALL	
Protection and Paint (Ref. 20-30-00, No.631)	
Protection and Paint (Ref. 20-30-00,	

DESCRIPTION	PART NO.
No.632)	
Protection and Paint (Ref. 20-30-00, No.639)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Position safety barriers.

(6) Make certain that visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(8) Connect hydraulic ground power unit to Green hydraulic system.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) Remove locking cap and open doors by operating handle located on LH main gear leg.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position, and display a warning notice prohibiting its operation.

(13) Shut down hydraulic power and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(15) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(16) Position safety collars on main gear door actuating jacks.

(17) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(18) Not applicable.

(19) Remove uplock (Ref. Fig. 402)

(a) Disconnect and cap electrical plugs.

(b) Disconnect and cap hydraulic lines.

(c) Disconnect Ultimate Emergency control rod (38).

(c1) Remove nut (35).

(c2) Remove bolt (37) and retain washer (36) for reinstallation.

(d) Remove brace rod (40) from uplock.

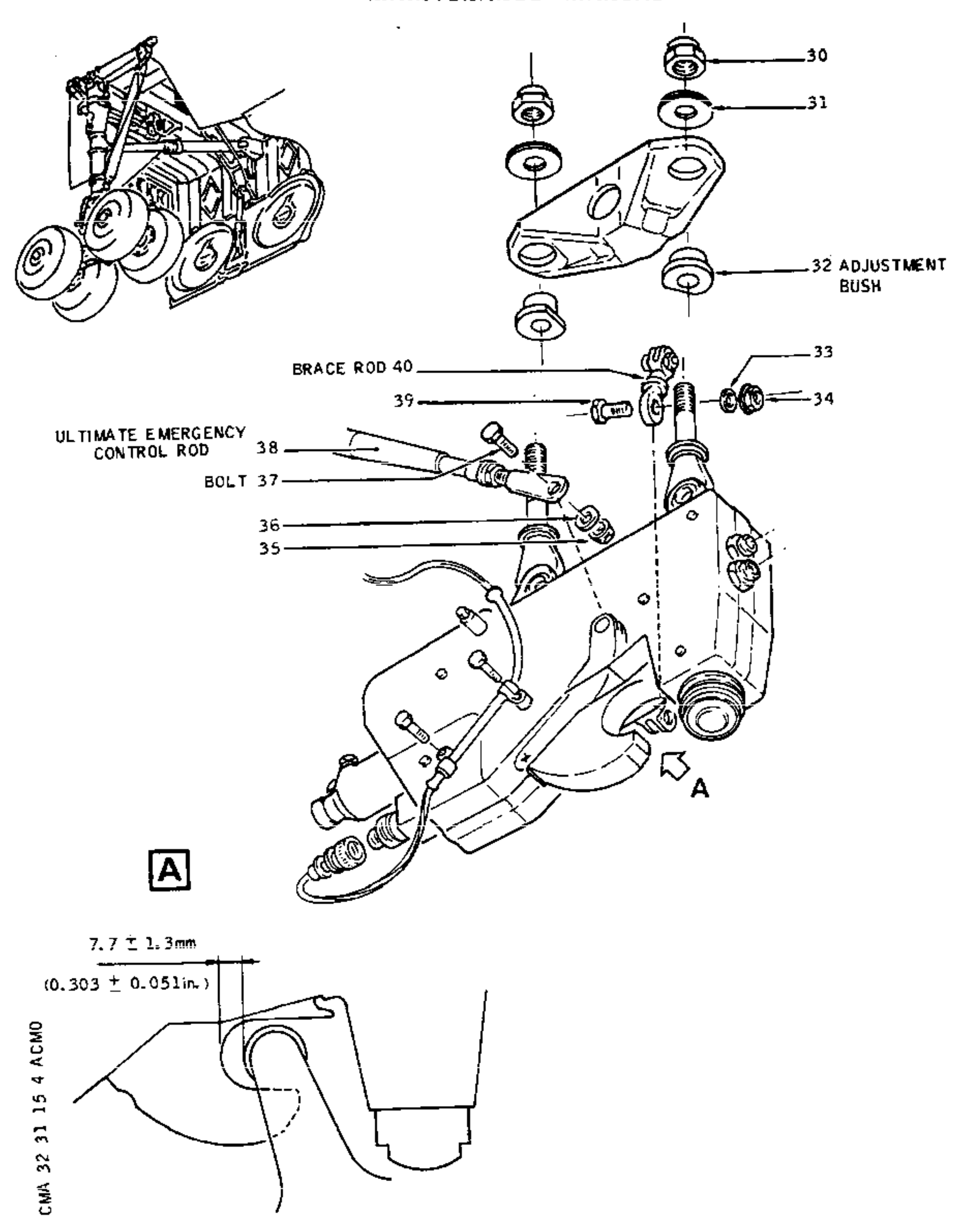
(d1) Remove nut (34).

(d2) Remove bolt (39) and retain washer (33) for reinstallation.

(e) Cut and remove lockwire, remove nuts (30), while supporting the weight of the uplock. Retain washers (31) for reinstallation.

C. Replacement of Adjustment Bushes (Ref. Fig. 403)

(1) Remove adjustment bushes (32) measure and note thickness of shoulder E.



Uplock
Figure 402

(2) Rework shoulder on replacement adjustment bush so that dimension E corresponds with shoulder on removed bush.

(3) Drill off-centre holes in replacement bushes, in accordance with clearance measured between uplock roller and interior of uplock hook at time of uplock removal.

NOTE : Holes shall be offset perpendicularly with respect to aircraft reference line, with fore-and-aft eccentricity being considered as correct.

(4) Machine chamfers and flat called for on that bush.

(5) Apply a protective coating to bushes (32).

- Apply successively a coat of products No.639, 631, 632 to machined parts of bushes.

NOTE : Apply products in correct sequence.

(6) Install bushes (32).

(7) Install uplock.

(a) Position uplock and washers (31). Install nut (30) and torque to between 3 and 5 m.daN (22.126 and 25.814 lbf.ft.). Safety nut (30) with lock-wire (Ref. 20-21-13).

(b) Connect brace rod (40).

- Install bolt (39) washer (33). Install nut (34), and torque to between 1 and 3 m.daN (7.375 and 22.126 lbf.ft.).

(c) Connect Ultimate Emergency control rod (38)

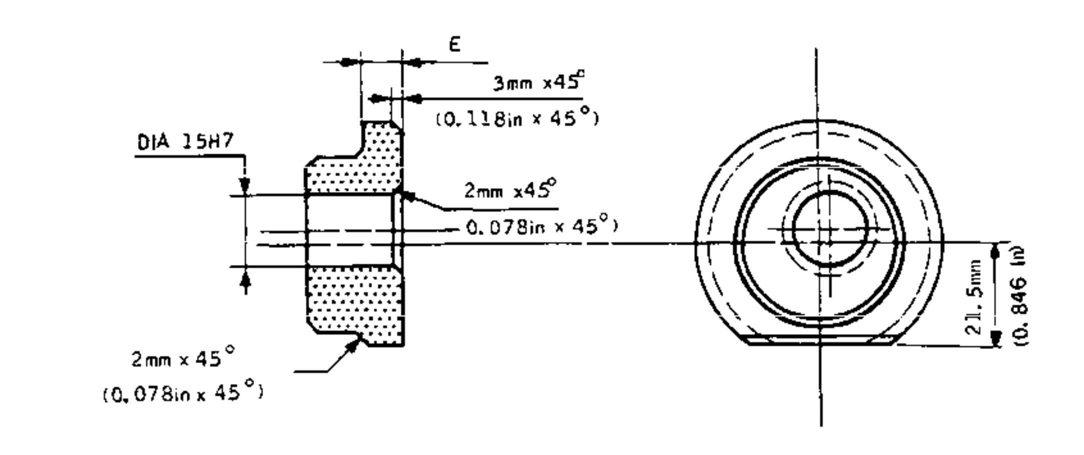
- Install bolt (37) washer (36). Install nut (35).

(d) Connect hydraulic lines.

(e) Connect electrical plugs.

(8) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(9) Remove safety clips and tags and reset circuit breakers.



Adjustment Bush
Figure 403

(10) If both main gears are to be retracted remove landing gear and shortening mechanism safety devices.

After SB 32-007 For A/C 002-002,

(11) Not applicable

<u>WARNING</u> : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Not applicable.

(14) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(15) Make certain that landing gear is locked. Shut down hydraulic power and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Make certain that clearance between roller and hook is 7.7 ± 1.3 mm (0.303 ± 0.051 in.).

(17) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's intrument panel, place landing gear Normal control lever in DOWN position.

(19) With landing gear downlocked, shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(20) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(21) If both main gears were retracted install landing gear and shortening mechanism safety devices.

After SB 32-007 For A/C 002-002,

(22) Not applicable.

(23) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(24) Not applicable.

(25) Not applicable.

(26) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(27) Remove safety collars from door actuating jacks.

(28) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(29) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(30) Close doors by operating handle located on LH main landing gear leg. Install locking cap.

(31) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(32) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(33) The uplock unit shall be carefully checked during initial pressurization for evidence of external leakage.

D. Close-Up

(1) Disconnect electrical ground power unit.

(2) Replenish Green and Yellow system tanks as required (Ref. 12-12-29).

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Remove safety barriers and access platform.

WARNING : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR.

(5) Remove safety stay.

(6) Lower aircraft onto its wheels.

4. Replace Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
Access Platform 3.22 m (10 ft. 7 in.)	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Special Material (Ref. 20-30-00, No.119)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's intrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Install safety collars on gear door actuating jacks.

C. Remove (Ref. Fig. 404)

(1) Disconnect and cap electrical connector.

(2) Remove protective cover (54).

(a) Cut lockwire and remove screws (53), remove cover.

(3) Fold back tab of lock washers (51), remove nuts (52), retain lock washers (51) and screws (50) for re-installation.

(4) Remove microswitch.

D. Preparation of Replacement Component

R If a new microswitch is to be installed, prepare as fol-
R lows :
R - Apply product No.119 to the annular volume around plunger
R - Install grease retaining membrane (supplied in special
R bag with microswitch).

E. Install

(1) Position microswitch and install using screws (50), nuts (52) and lock washers (51).
Safety nut by folding back lock washer tabs.

(2) Install protective cover (54) using screws (53).
Make certain that the seal is correctly positioned on cover.
Safety screws with lockwire (Ref. 20-21-13).

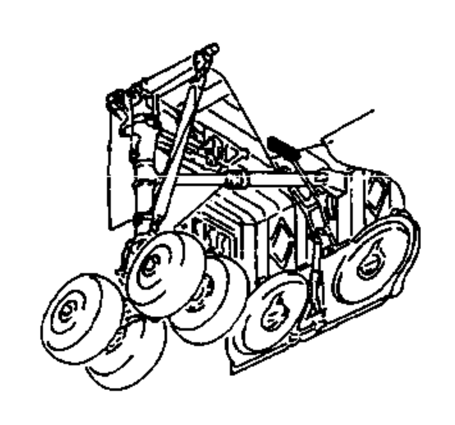
(3) Connect electrical connector.

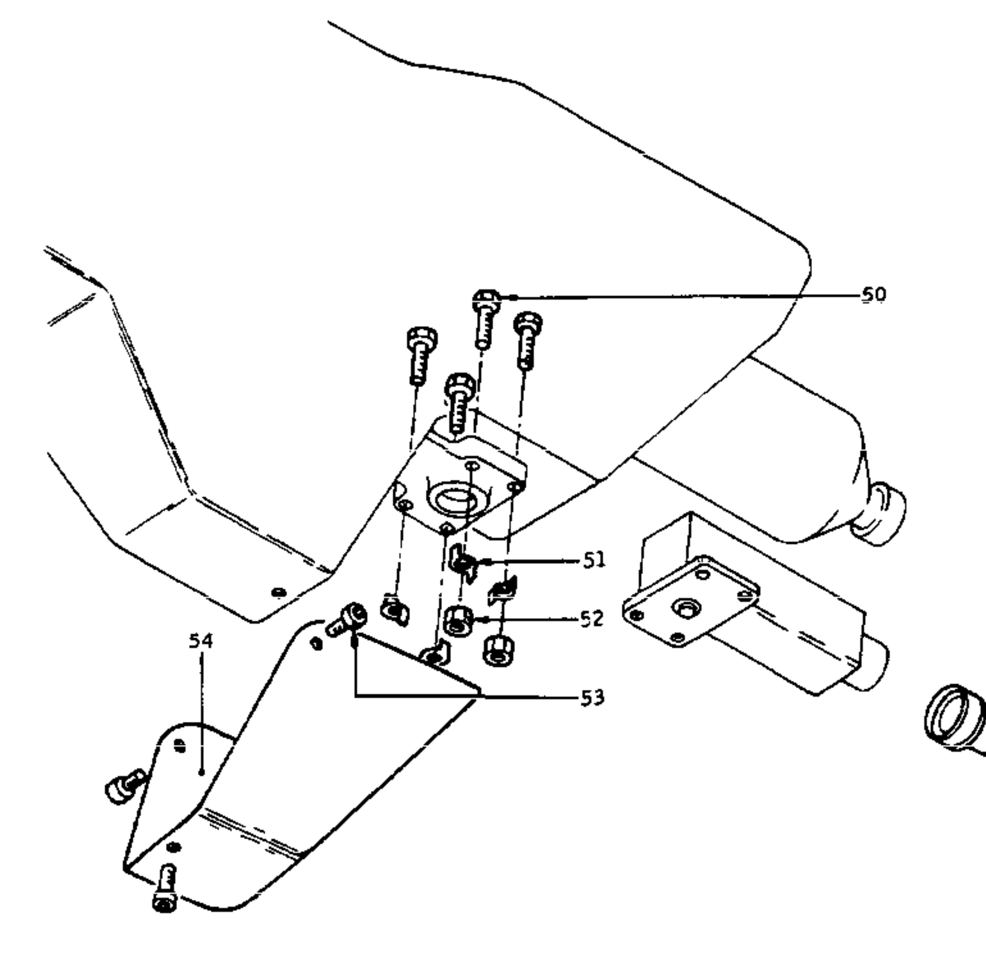
F. Test

(1) Manually lock hook of uplock associated with replaced microswitch.

(2) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(3) On First Officer's instrument panel, check on gears position indicating unit that UPPER LOCKS indicator light illuminates.





Microswitch
Figure 404

R

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Make certain that uplock hook is not locked and open it manually.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove safety collars from gear door actuating jacks.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(4) Close gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(8) Close access doors.

Printed in England

MAIN GEAR UPLOCK - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Check of hydraulic fluid level in main gear uplock mechanical release damper.
Check of load required to release uplock in Ultimate Emergency.

2. Check of Hydraulic Fluid Level

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.22 m (10 ft. 7 in.)	
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Hydraulic Fluid Container	
Lockwire, Dia. 0.60 mm (0.024 in.) Corrosion Resistant Steel	
Hydraulic Fluid (Ref. 20-30-00, No.012)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Connect electrical ground power unit, and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) Remove locking cap and open doors by means of operating handle located on LH main landing gear leg.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) Install safety collars on door actuating jacks.

C. Check (Ref. Fig. 601)

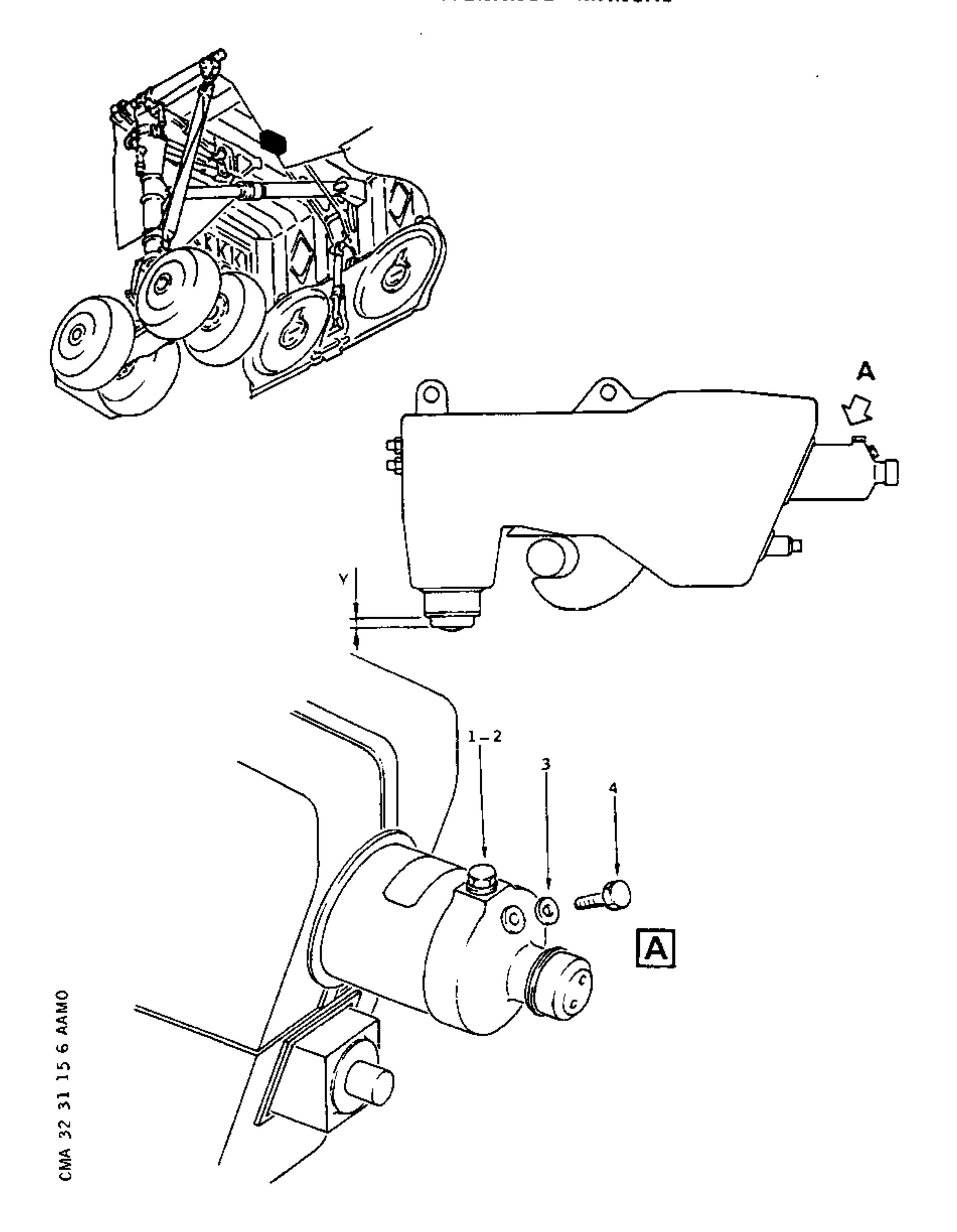
(1) Cut and remove lockwire, remove screw (4) retain washer (3).

(2) Check that hydraulic fluid appears at level indication port.

(3) If level of fluid is low cut and remove lockwire, and remove filling port screw (1) and retain washer (2) for reinstallation.
Add Product No.012 until it begins to drip from level indication port.

(4) Install washers (2) (3) and tighten screws (1) and (4). Safety screws with lockwire (Ref. 20-21-13).

(5) Check that uplock stop is in extended position. Dimension Y should be 16 mm (0.629 in.) approx.



Main Gear Uplock
Figure 601

D. Close-Up

(1) Make certain that working area is clean and clear of tools and miscelleneous items of equipment.

(2) Remove safety collars from door actuating jacks.

(3) Pressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) Close doors by means of operating handle located on LH main landing gear leg. Install locking cap.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit.

3. Check of Load at Uplock Release

A. Equipment and Materials.

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.220 m (10ft. 7in.)	
Safety Collars - Main Landing Gear Doors - Actuating Cylinder	D921317000
Circuit Breaker Safety Clips	
Dynamometer	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

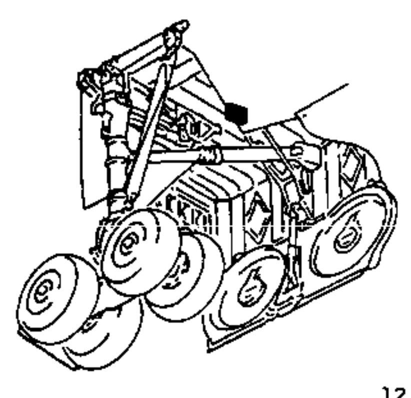
(11) Install safety collars on landing gear door jacks.

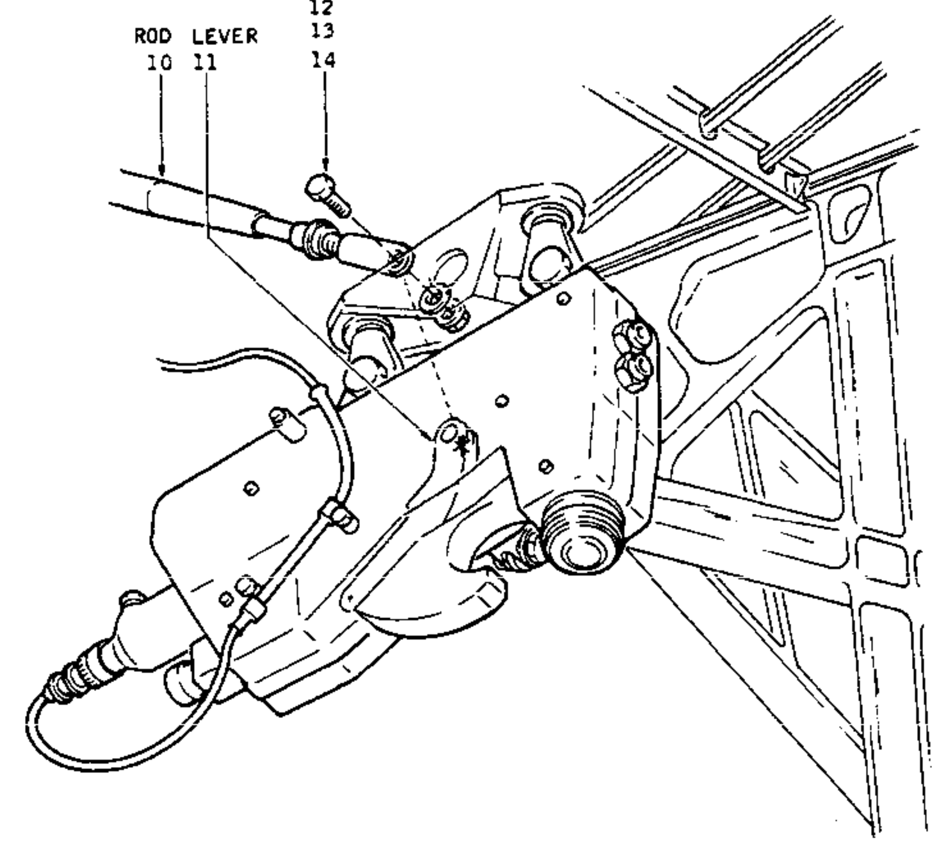
C. Check (Ref. Fig. 602)

(1) Disconnect Ultimate Emergency control rod (10) from lever (11).

(a) Remove nut (12) retain washer (13) for reinstallation and remove bolt (14).

(2) Manually lock uplock hook.





CMA 32 31 15 6 ACMO

Uplock Ultimate Emergency Control
Figure 602

(3) Connect dynamometer to end of lever (11) and measure load required to release uplock hook.
This load should be between 35 and 55 daN (78.60 and 123.60 lbf).

(4) Manually open uplock hook.

D. Close-Up

(1) Connect rod (10) to lever (11).

(a) Install bolt (14), washer (13) and nut (12).

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Remove safety collars from landing gear door actuating jacks.

(4) Pressurize Green hydraulic system (ref. 29-11-00, Servicing).

(5) Remove safety clips and tags and reset circuit breakers.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Close doors by operating handle located on LH main gear leg. Install locking cap.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(11) Close access doors.

MAIN GEAR METERING VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A metering valve installed in each main gear bay reduces landing gear retraction speed at the end of retraction sequence. Removal of both metering valves being identical, only one removal/installation procedure is described here.

2. Main Landing Gear Metering Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform, 3.220 m (10 ft. 7 in.)	
Hydraulic Fluid Container	
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

(4) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(5) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

C. Remove

(1) Disconnect crank lever (7) from metering valve.

(a) Remove cotter pin and remove nut (1).

(b) Remove washer (2), pin (5) and spacers (3) and (4)

(2) Disconnect hydraulic lines.

(3) Remove cotter pins and remove nuts (1), remove washers

(2) and (9).

NOTE : Washers (2) and (9) are not identical.

(4) Remove metering valve.

(5) Blank off hydraulic lines using blanking caps.

D. Preparation of Replacement Component

NOTE : The metering valve is filled with Product No.011 (Ref. 20-30-00).

(1) The replacement component is not equipped with its unions. Remove them from the removed equipment and replace seals before installation.

(2) Do not lock elbow unions.

E. Install

(1) Remove blanking caps from hydraulic lines.

(2) Position metering valve on its mounting studs.

(3) Install washers (2) and (9), nuts (1). Tighten nuts (1) and safety with cotter pins.

(4) Connect hydraulic lines.

(5) Tighten elbow unions.

(6) Tighten hydraulic line unions.

(7) Couple crank lever (7) with bearing (6) to metering valve.

(a) If necessary adjust spacer (4).

(b) Install spacers (3) and (4).

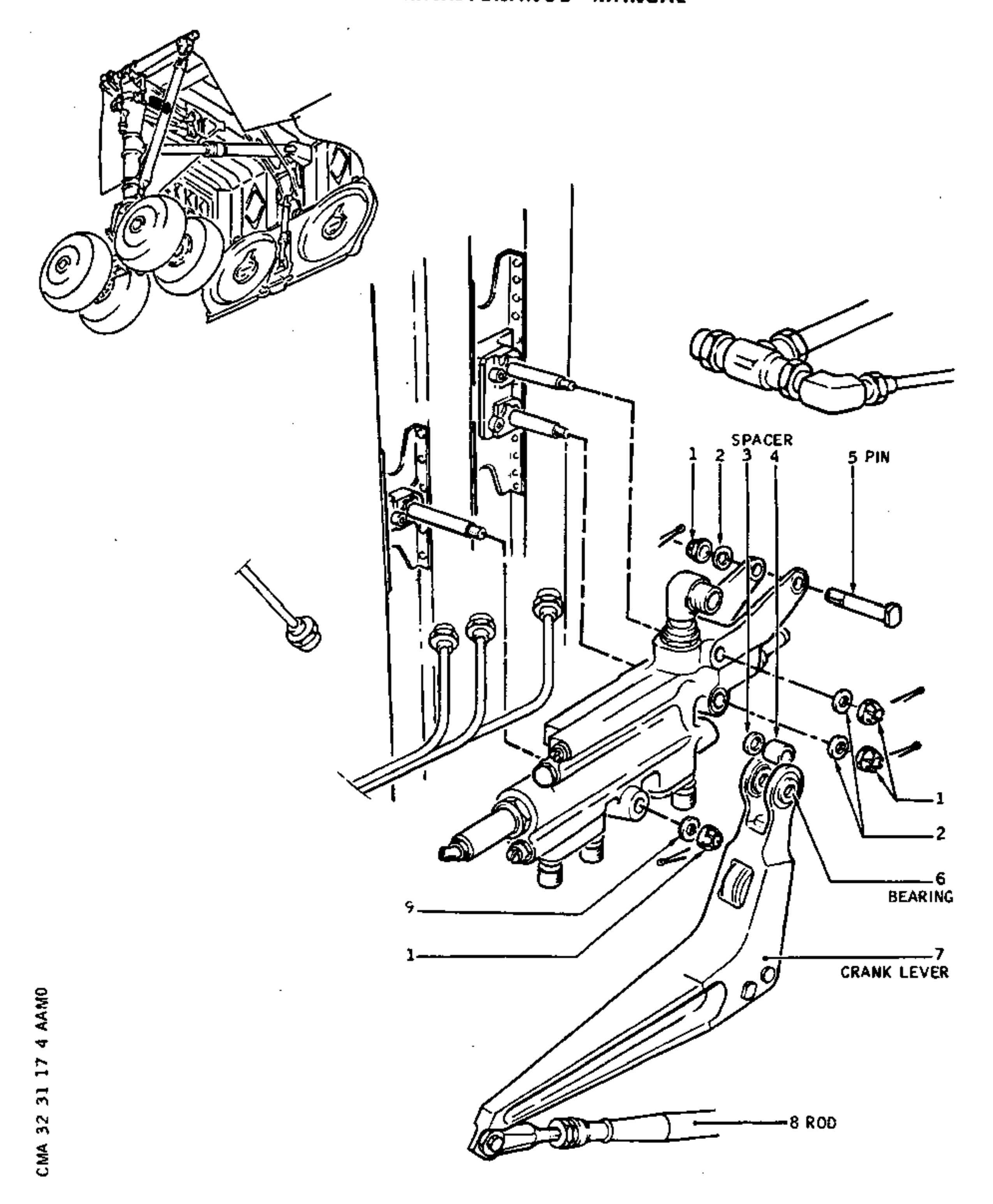
(c) Install pin (5).

(d) Install washer (2) and nut (1).

(e) Tighten nut (1) and safety with cotter pin.

(8) Make certain the end-fitting centre-to-centre distance of rod (8) is 350 mm (13.779 in.). Adjust if necessary.

(9) Remove hydraulic fluid container.



Metering Valve
Figure 401

(10) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(11) Remove access platform.

(12) Remove safety clips and tags and reset circuit breakers

(13) Remove warning notices.

(14) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

F. Tests

The replacement component shall be checked for leaks on completion of a gear retraction/extension cycle (Ref. 32-31-00, Adjustment/Test).

G. Close-Up

(1) Replenish hydraulic tanks as required (Ref. 12-12-29).

(2) Close access doors.

SHUTTLE VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The shuttle valve prevents interconnection between actuating cylinder Normal and Emergency power supplies (extension side). The shuttle valve is located on the actuating cylinder body, upper part.

2. Shuttle Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
**ON A/C ALL	
Access Platform 3.50 m (11ft. 4 in.)	
Circuit Breaker Safety Clips	
Hydraulic Fluid Container	

DESCRIPTION	PART NO.
Lockwire Dia. 0.8 mm (0.032 in.) (corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open doors by operating handle located on LH main gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS CLOSE SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(12) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(13) Install safety collars on gear door actuating jacks.

(14) De-energize the aircraft electrical network.

(15) Loosen hydraulic line clamp block nuts.

C. Remove (Ref. Fig. 401)

(1) Mark, disconnect and blank off hydraulic hoses and lines.

(2) Cut and remove lockwire and remove screws (2) retain washers (3) for reinstallation.

(3) Remove shuttle valve and remove spool (5).

D. Preparation of Replacement Component

(1) On removed shuttle valve, remove elbow unions (1) and (4), the locknuts and discard seals.

(2) On replacement shuttle valve, install elbow unions (1) and (4) with new seals and the locknuts.

(3) Check that back-up rings (7) and (8), O-ring (9) and square section seal (6) are correctly installed on replacement spool.
The O-ring must be installed on end of spool marked with reference groove.

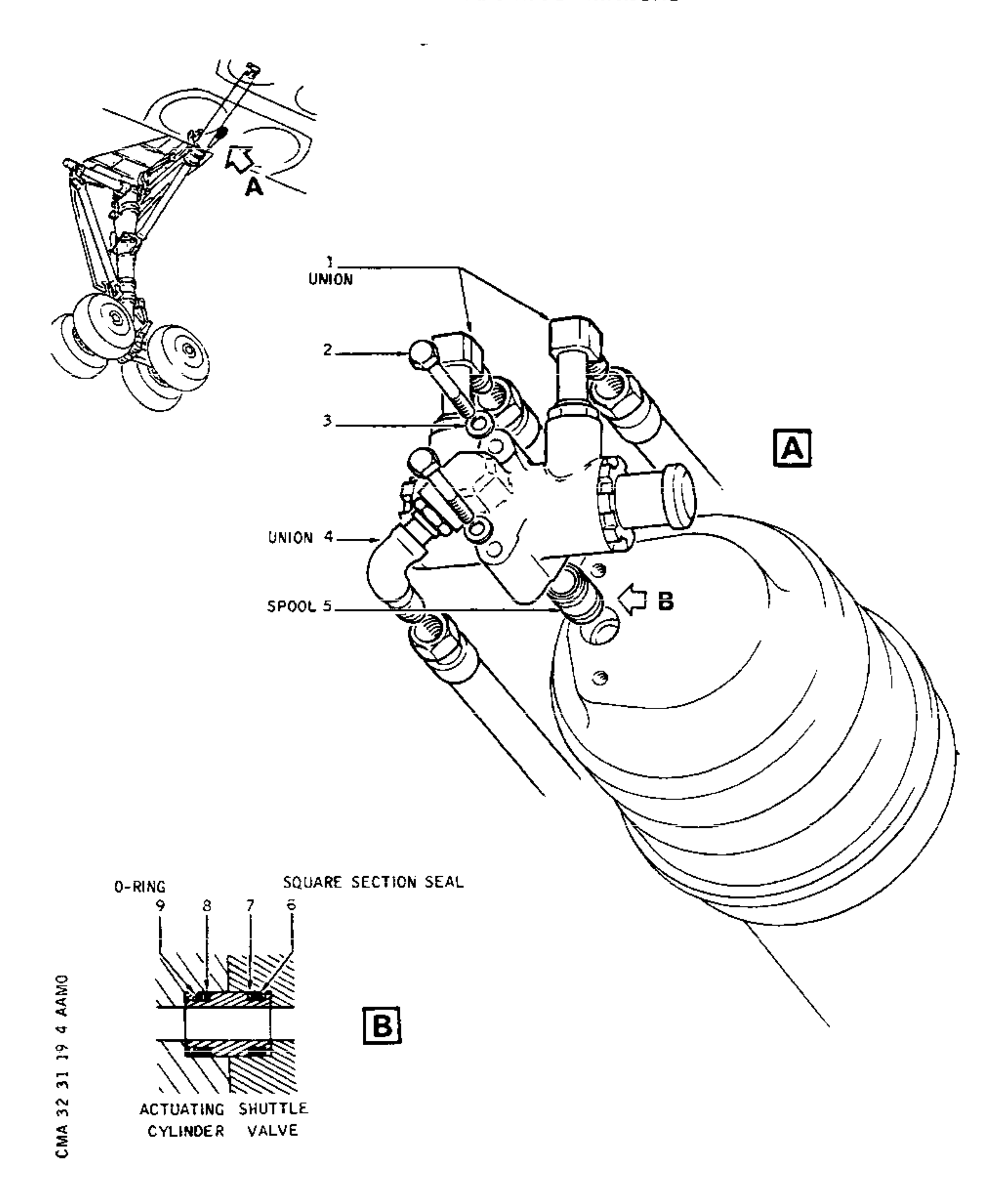
E. Install

(1) Install spool (5) with reference groove facing actuating cylinder.

(2) Position shuttle valve and secure with washers (3) and screws (2).
Safety screws (2) with lockwire (Ref. 20-21-13).

(3) Connect hydraulic hoses and lines according to marking made during removal.

<u>WARNING</u> : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED



Shuttle Valve
Figure 401

SHAPE. IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(4) Tighten hydraulic line clamp block nuts.

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(6) Remove safety clips and tags and reset circuit breakers.

(7) Remove safety collars from door actuating jacks.

(8) Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(9) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(12) Close doors by operating handle located on LH main gear leg. Install locking cap.

(13) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(14) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Test

(1) Carry out a landing gear Normal retraction and extension (Ref. 32-31-00, Adjustment/Test).

(2) Carry out a landing gear Emergency extension (Ref. 32-32-00, Adjustment/Test).

(3) Check new component for leakage during these operations.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Replenish hydraulic tanks if necessary.

(3) Close access doors.

MAIN GEAR ACTUATING CYLINDER - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main gear actuating cylinder is attached, at one end to the retraction shaft by means of a spherical end-fitting and, at the other end, to the rocker.

2. Main Gear Actuating Cylinder

A. Equipment and Materials

	DESCRIPTION	PART NO.
	Electrical Ground Power Unit	
	AIR HYDRAULIC Tool Kit	
**ON A/C ALL		
B	C Spanner	256700/78 or
B		2-32-1517-1BA
**ON A/C ALL		
	Wrench - Tenoned	256800/78

DESCRIPTION	PART NO.
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000

**ON A/C ALL

Access Platform 3.50 m (11 ft. 4 in.)

Circuit Breaker Safety Clips

Lockwire - Dia. 0.80 mm (0.032 in.)
(Corrosion Resistant Steel)

Hydraulic Fluid Container

Common Grease (Ref. 20-30-00, No.051)

Glues and Adhesives (Ref. 20-30-00, No.344)

Cleaning (Ref. 20-30-00, No.469)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network. (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open doors by operating handle located on LH main gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Install safety collars on door actuating jacks.

(14) De-energize the aircraft electrical network.

C. Remove (Ref. Fig.401 and 402)

(1) Remove, cap and mark hydraulic hoses.

(2) Actuating cylinder - retraction shaft attachment.

NOTE : The actuating cylinder is removed at the sliding rod/spherical end-fitting connection. The spherical end-fitting (9) remains attached to the retraction shaft.

(a) Cut lockwire and remove lock plate (11). attach screws (10). Retain lock plate (11) for reinstallation.

(b) Fully unscrew sleeve (12) on spherical end-fitting (9) using C spanner 256700/78 and wrench 256800/78.

NOTE : This results in a sliding rod retraction

equal to the length of the thread on the sleeve (12) i.e. 52 mm (2.05 in.) approx.

(3) Actuating cylinder - rocker attachment.

NOTE : The actuating cylinder is removed at bearing of universal joint knuckle. The universal joint knuckle remains attached to actuating cylinder.

CAUTION : SUPPORT WEIGHT OF ACTUATING CYLINDER. ACTUATING CYLINDER WEIGHS APPROXIMATELY 50 daN (110 lbf.).

(a) Cut lockwire and remove nuts (7) and (8). Discard tab washers (6).

(b) Remove U-clips (5).

(c) Disengage pillow blocks (4) from rocker studs (2) by pulling down on actuating cylinder.

CAUTION : RETAIN PILLOW BLOCK SPACERS (3) AND NOTE THEIR RESPECTIVE POSITIONS ON ROCKER (1) STUDS (2).

(d) Remove actuating cylinder by withdrawing sliding rod from spherical end-fitting (9). Spherical end-fitting (9) remains attached to retraction shaft.

D. Preparation of Replacement Component

(1) On Removed actuating cylinder.

(a) Remove shuttle valve (Ref. 32-31-19, Removal/Installation).

(b) Remove pressure relief valve (Ref. 32-31-36, Removal/Installation).

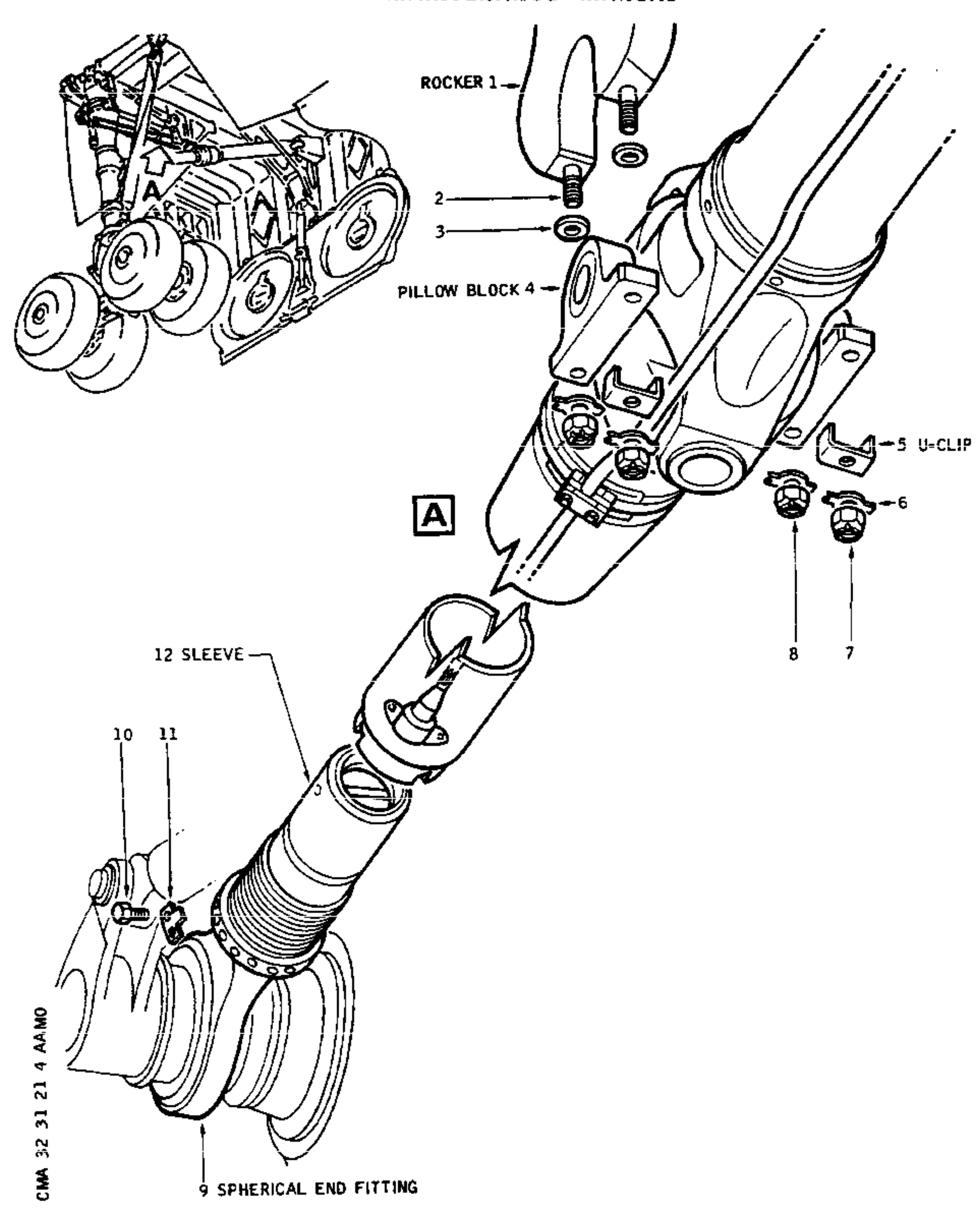
(c) Remove hydraulic lines and attach fittings.

(d) Remove pillow blocks.

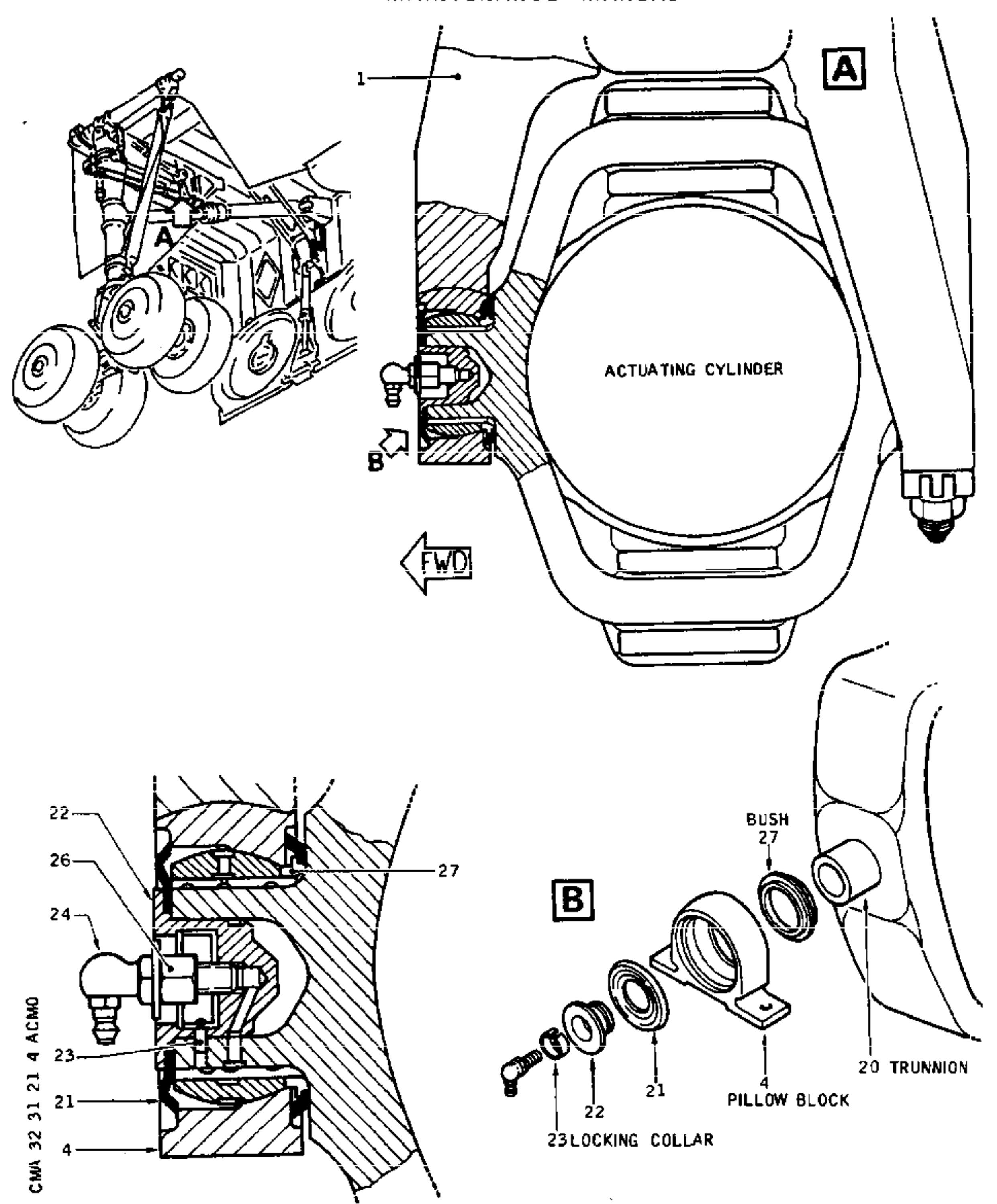
(d1) Remove grease nipple (24) with its union (26).

(d2) Remove locking collar (23).

(d3) Extract grease slinger (22) using a 1/4 in.



Actuating Cylinder - Retraction
Shaft Attachment
Figure 401



Actuating Cylinder - Rocker Attachment
Figure 402

dia. screw.

(d4) Remove packing (21).

(d5) Remove pillow block (4).

(d6) Remove seal holder bush (27).

(2) On replacement actuating cylinder.

(a) Install pilow blocks.

(a1) Check bush (27) lip seal for correct condition.

NOTE : If necessary replace lip seal. Bond new lip seal to bush (27) with product No.344.

(a2) Remove residual grease from trunnion (20), clean with product No.469, dry with filtered air then grease with product No.051.

(a3) Install seal holder bush (27).

(a4) Install pillow block (4).

NOTE : Pillow block shall be installed with chamfer on bronze bush facing universal joint, thus aligning seal holder bush (27).

(a5) Install packing (21).

(a6) Install grease slinger (22).

NOTE : Install grease slinger so as to align holes for locking collar (23) stud.

(a7) Install grease slinger locking collar (23).

(a8) Install grease nipple together with its locating washer.

NOTE : The elbow grease nipple (24) and union (26) face front of the aircraft with nipple pointing downwards. The straight grease nipple faces rear of the aircraft.

(b) Install hydraulic lines but do not tighten support block screws at this stage.

(c) Install pressure relief valve (Ref. 32-31-36, Removal/Installation).

(d) Install shuttle valve (Ref. 32-31-19, Removal/Installation).

(e) Using AIR HYDRAULIC tool kit fully extend actuating cylinder sliding rod then retract sliding rod approximately 52 mm (2.05 in.).

(f) Fully tighten hydraulic line support block screws.

E. Install

(1) Check rocker studs (2) for correct condition and grease with product No.051.

(2) Grease spherical end-fitting sleeve (12) with product No.051.

(3) Offer up actuating cylinder and insert spherical end-fitting sleeve (12) in sliding rod. Screw up sleeve several turns using C spanner 256700/78.

(4) Actuating cylinder to rocker attachment.

(a) Install spacers (3) on rocker (1) studs (2) in their respective positions noted during removal.

(b) Offer up actuating cylinder and engage pillow Blocks (4) on rocker studs (2). If necessary screw sleeve (12) in or out.

(c) Install the two U- clips (5) with new tab washers (6) and nuts (7) (8). Torque nuts to between 2 and 2.5 m.daN (15 and 17 lbf.ft.).

(d) Safety nuts with cotter pins and fold back tab washer (6) tabs.

(5) Actuating cylinder to retraction shaft attachment.

(a) Screw spherical end-fitting sleeve (12) fully home in sliding rod using C spanner 256700/78 and wrench 256800/78.

Torque to between 12 and 15 m.daN (89 and 111 lbf.ft.).

(b) Install lock plate (11) in one of the slots in sliding rod.

NOTE : If this is not possible, procure a new lock plate and trim to suit.

(c) Secure lock plate (11) with screws (10). Safety screws (10) with lockwire.

(6) Connect hydraulic hoses in accordance with marking made during removal.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE.
IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(7) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(8) Remove safety clips and tags and reset circuit breakers.

(9) Remove safety collars from door actuating jacks.

(10) Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(11) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(12) Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

(13) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(14) Close doors by operating handle located on LH main landing gear leg.
Install locking cap.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Test

(1) Carry out a landing gear Normal retraction and extension (Ref. 32-31-00, Adjustment/Test).

(2) Carry out a landing gear Emergency extension (Ref. 32-32-00, Adjustment/Test).

(3) During these operations, check replaced components for leakage.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Replenish hydraulic tanks as necessary (Ref. 12-12-29).

(3) Close access doors.

SHOCK ABSORBER SHORTENING JACK - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The shock absorber shortening jack is attached at one end to a support mounting installed on the landing gear leg/crossbeam shaft and at the other end to the inner retraction shaft rear crank. At the beginning of the landing gear retraction sequence the shock absorber shortening jack applies torque to the rear crank/retraction shaft facilitating shock absorber shortening.

During landing gear extension the shock absorber shortening jack ensures the realignment and locking of the internal linkage.

2. Shock Absorber Shortening Jack

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 3.50 m (11 ft 4 in.)	
Extractor	150400/78
Extractor	255300/78
**ON A/C ALL	
B Wrench - Pin	150900/78 or B 2-32-1518-1BA
**ON A/C ALL	
Wrench - Open End	151000/78

DESCRIPTION	PART NO.
Guide Assembly	255400/78
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	
Lockwire - dia. 0/80 mm (0.032 in.) (Corrosion Resistant Steel)	
Common Grease (Ref. 20-30-00, No.051)	
Cleaning (Ref. 20-30-00, No.469)	
Glues and Adhesives (Ref. 20-30-00, No.344)	

B. Prepare

(1) Position access platform.

(2) Make certain that visor is not uplocked.

(3) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

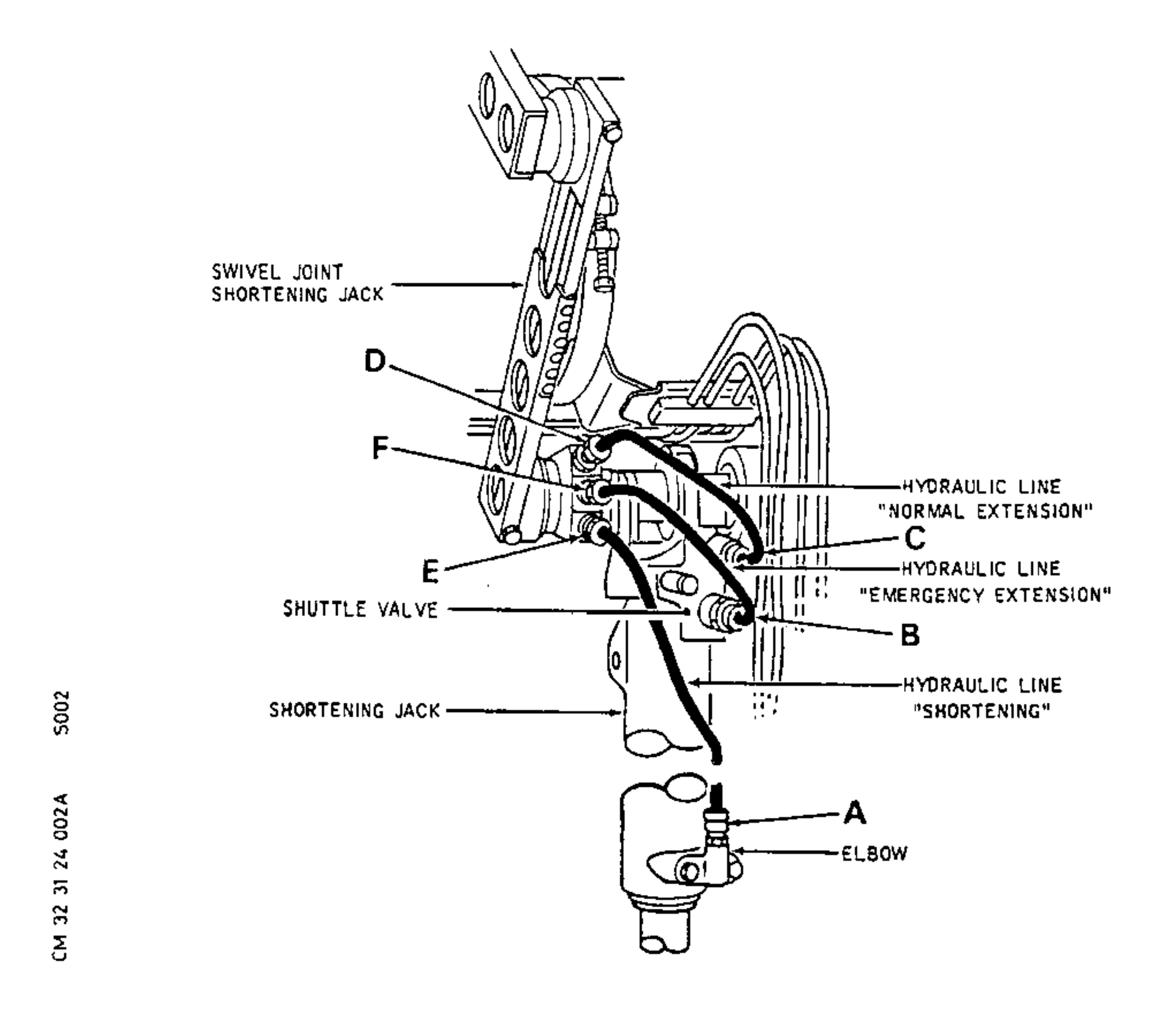
(4) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Note location of, then disconnect and cap hydraulic
R lines, swivel joint and equipment connections
R (Ref. Fig. 401).

(7) Cut and remove lockwire, remove screws (26) and washers (27), retain adjustable setting shim (33) and disengage swivel joint (34) from coupling plate (1) by moving it
R upwards. Leave the swivel joints in these positions.



OUTPUT SWIVEL JOINT	HYDRAULIC LINE	INPUT EQUIPMENT
D	"NORMAL EXTENSION"	C SHUTTLE VALVE
F	"EMERGENCY EXTENSION"	B SHUTTLE VALVE
E	"SHORTENING"	A ELBOW

Hydraulic Lines Connections
Figure 401

R C. Remove (Ref. Fig. 401A)

(1) At lower hinge points :

R (a) Drive out pin (17) remove nut (18) using tool
R 150900/78, while holding retaining pin (23) with
R wrench 151000/78.

(b) Extract retaining pin (23) together with grease nipple, using extractor 150400/78.

(c) Extract shear bush (24) using extractor 255300/78.

(d) Uncouple fork end-fitting from its lug. Retain lip seals (20) and (21), for reinstallation.

(2) At upper hinge point

(a) Cut and remove lockwire, remove screws (31), disconnect guide (28).
Retain washers (30) for reinstallation.

(b) Remove cotter pin (2) and nut (3), then remove lock bolt (25) fitted with grease nipple.
Retain washer (4) for reinstallation.

R (c) Remove coupling plate (1) with the retainer sleeve (32).

(d) Separate retainer sleeve (32) from coupling plate (1).

(e) Remove thrust bush (5).

(f) Remove and retain lip seal (6) for reinstallation.

R (g) Disengage ball joint of jack from jack support
R pin.

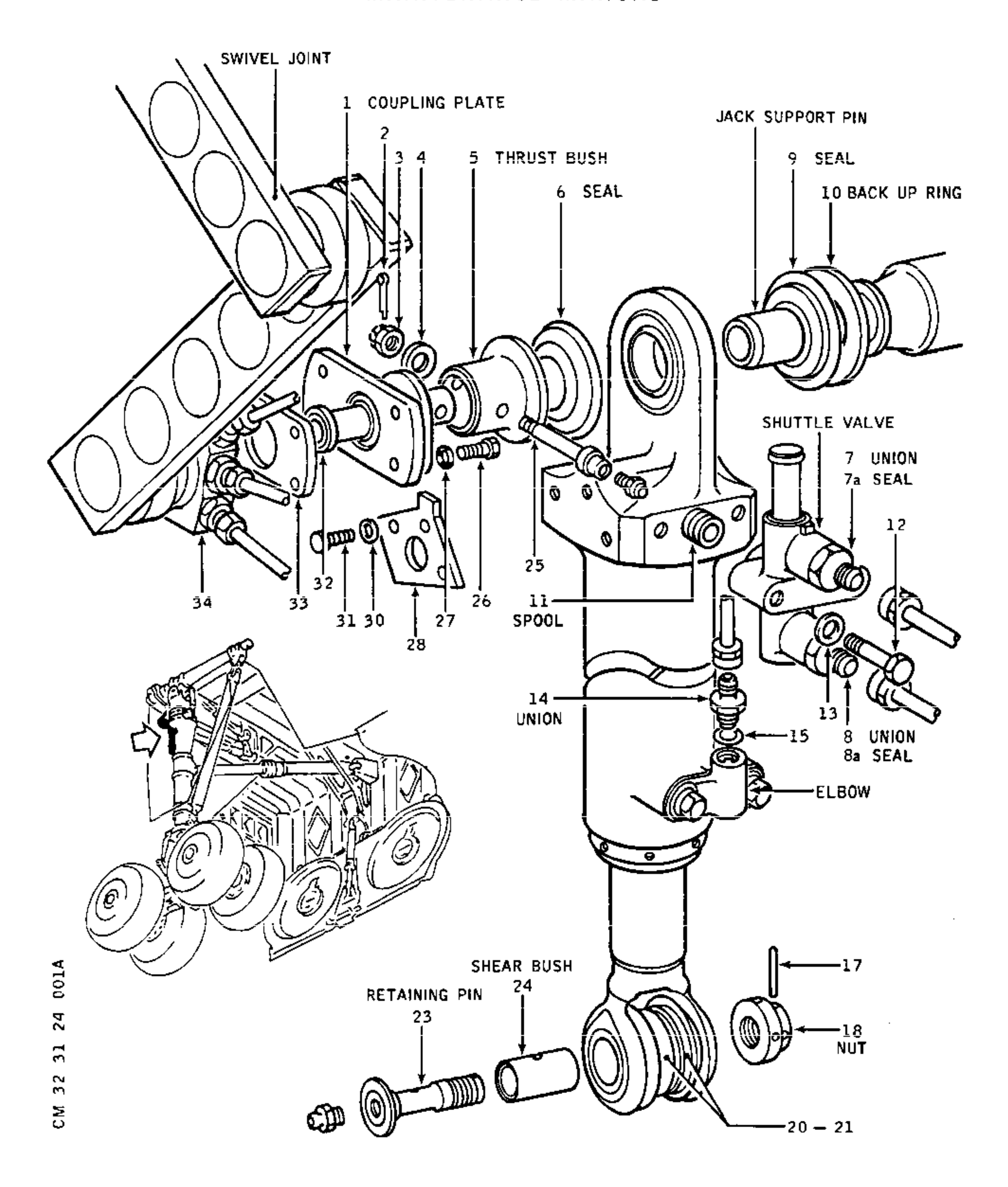
(h) Remove jack.

NOTE : Lip seal (9) and back-up ring (10) may be
R left on the jack support pin.

D. Preparation of Replacement Component

(1) On removed jack

R (a) Cut and remove lockwire, remove screws (12) and remove shuttle valve. Retain washers (13) for reinstallation.



Shock Absorber Shortening Jack
Figure 401A

R

(b) Make certain that spool (11) remains on removed
R jack. Install blanking plate instead of shuttle valve.

(c) Remove straight union (14) from elbow. Retain
R straight union for reinstallation. Discard seal
R (15). Install blanking plug on elbow.

(2) On replacement jack

(a) On upper part of jack

(a1) Remove blanking plate.

(a2) Make certain that spool (11) fitted with new seals, is installed (positioning groove not visible).

(a3) Install shuttle valve, insert washers (13) and install screws (12).
Torque screws (12) to between 0.3 and 0.4
R m.daN (26.552 and 35.403 lbf in.) and
R safety with lockwire (Ref. 20-21-13).

(b) On lower part of jack

(b1) Remove blanking plug from elbow.

(b2) Fit a new seal (15).

(b3) Fully tighten straight union (14).

R (3) Check lip seals (6), (9), (20) and (21) for correct condition. Unserviceable seals shall be replaced as follows :

R (a) Remove seals from seal retainers.

(b) Clean seal retainers carefully, using Product No.469.

(c) Allow to dry.

(d) Apply cement Product No.344 to seal retainers.

(e) Fit seals to associated seal retainers.

E. Install

(1) At upper hinge point

(a) Make certain that back-up ring (10) and lip seal
R (9) are correctly located on the jack support pin.

R (b) Introduce the ball joint of jack on jack support pin.

(c) Install lip seal (6).

(d) Install thrust bush (5) on jack support pin.

(e) Insert retainer sleeve (32) into coupling plate (1).

(f) Fit retainer sleeve coupling-plate assembly into bore of jack support pin.

(g) Line up locking holes in retainer sleeve (32) with holes in thrust bush (5).

(h) Insert lock bolt (25) with grease nipple and washer (4). Install nut (3) and safety with cotter pin
R (2).

(i) Insert guide (28) tenon in its groove on coupling plate (1) and correctly position assembly.

(j) Attach guide (28) to jack body by means of screws (31) and washers (30).
Torque screws (31) to between 0.38 and 0.50 m.daN (33.632 and 44.253 lbf in.) and safety with lock-wire (Ref. 20-21-13).

(k) Offer up swivel joint (34) on coupling plate (1).

(l) Note clearance. If necessary adjust setting shim (33).

(m) Install shim (33).

(n) Attach coupling plate (1) to swivel joint with screws (26) and washers (27).
Torque screws (26) to between 0.16 and 0.22 m.daN (14.161 and 19.471 lbf in.) and safety with lock-wire (Ref. 20-21-13).

(2) At lower hinge point

(a) Position lip seals (20) and (21) either side of
R the ball joint.

R (b) Position jack fork end fitting on ball joint, holding the lip seals in position at the same time.

R (c) Insert retaining pin (23) in shear bush (24).
Install guide assembly 255400/78 on retaining
R pin (23).

(d) Insert retaining pin (23) shear bush (24) assembly into fork end-fitting and remove guide assembly 255400/78.

(e) Install nut (18).
Torque to between 0.3 and 0.5 m.daN (26.552 and 44.253 lbf in.) and safety with a cotter pin (17).

(f) Remove caps and connect hydraulic lines, according to location noted at time of preparation (Ref. Fig. 401).

(3) Remove safety clips and tags and reset circuit breakers.

(4) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(5) Remove access platform.

F. Test

Carry out a leakage test (Ref. 32-31-24, Adjustment/Test).

G. Close-Up

(1) Lubricate jack hinge points (Ref. 12-22-32).

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Replenish hydraulic tanks as required (Ref. 12-12-29).

(4) Close access doors.

3. Shuttle Valve

NOTE : The shuttle valve is normally considered as part of the shortening jack assembly and a replacement jack assembly will be fitted with a new shuttle valve. If the shuttle valve only is to be replaced the following procedure should be followed.

A. Prepare

(1) Position access platform.

(2) Make certain that visor is not uplocked.

(3) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

B (4) Depressurize Green and Yellow hydraulic tanks (Ref.
B 29-13-00, Servicing).

B (5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	BREAKER	CIRCUIT REF.	MAP
B UC RAISE DOORS CLOSE SUP	15-215		G 1	A 6
B UC SELECTOR RAISE CONT			G 2	A 7
B UC LOWER DOORS OPEN SUP			G 3	A 8
B UC SELECTOR LOWER CONT			G 4	A 9

B (6) Note location of, then disconnect and cap hydraulic
B lines.

B B. Remove (Ref. Fig. 401)

B (1) Remove screws (12), washers (13) and remove shuttle
B valve retain screws and washers for reinstallation.

B (2) Remove spool (11), retain for reinstallation.

B (3) Remove unions (7) and (8) from shuttle valve, retain for
B reinstallation.

B C. Install

B (1) Fit spool (11) with new seals and reinstall correctly
B into the jack (i.e. positioning groove not visible).

B (2) Install shuttle valve, insert washers (13) and install
B screws (12).
B Torque screws (12) to between 0.3 and 0.4 m.daN (26.552
B and 35.403 lbf in.).

B <u>NOTE</u> : It is possible to fit the shuttle valve
B incorrectly (turned through 180°), and this
B will result in excessive retraction times.
B Ensure, therefore, that the valve is fitted in
B accordance with the illustration.

B (3) Connect hydraulic lines, according to location noted at
B time of removal.

B (4) Remove safety clips and tags and reset circuit breakers.

B (5) Pressurize Green and Yellow hydraulic tanks (Ref.
B 29-13-00, Servicing).

B (6) Remove access platform.

B D. Test

B Carry out a leakage test (Ref. 32-31-24, Adjustment/Test).

B E. Close-Up

B (1) Make certain that working area is clean and clear of
B tools and miscellaneous items of equipment.

B (2) Replenish hydraulic tanks as required (Ref. 12-12-29).

B (3) Close access doors.

SHOCK ABSORBER SHORTENING JACK - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The purpose of this test is to check the shock absorber shortening jack for leakage, after replacement.

WARNING : PRESSURIZATION OF THE NORMAL LANDING GEAR SYSTEM, WITH AIRCRAFT ON WHEELS AND LANDING GEAR NORMAL CONTROL LEVER IN UP POSITION, CAN BE CARRIED OUT EXCEPTIONALLY IN CASE OF NEED.
(MAXIMUM PERMISSIBLE FREQUENCY - ONCE EVERY 100 FLIGHTS).

2. Test of Shock Absorber Shortening Jack for Leakage

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Snapwire 0.50 mm (0.020 in.)	
Circuit Breaker Safety Clips	
Safety Collars - Main Landing Gear	D921317000

DESCRIPTION	PART NO.
Door Actuating Cylinder	
Safety Sleeve - Nose Landing Gear Door	E925002000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POWER IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated. (Gear downlocked).

C. Test

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(2) On centre console, place landing gear and door Emergency control lever in DOORS position.

(a) Main gear and nose gear doors open.

(3) Shut down and depressurize yellow hydraulic system (Ref. 29-21-00, Servicing).

(4) Install safety collars on gear door jacks.

(5) Pressurize yellow hydraulic system (Ref. 29-21-00, Servicing).

(6) On centre console, place landing gear and door Emergency control lever in WHEELS position.

(7) Check shock absorber shortening jack for leakage.

(8) Shut-down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(9) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(10) Make certain that nose gear wheels are centred.

(11) Open door 123AB.

(12) On relay box 2-123, ground terminal 14B on connector UT 1837.

(13) On nose gear, disconnect microswitch (G321) plug. Connect plug (G321A) terminal B to ground.

(14) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH UC WEIGHT SW 'B' SYS SUP	3-213	G294	B9

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) On First Officer's instrument panel, press O/RIDE PRESS pushbutton, and place landing gear Normal control lever in UP position.

(17) Check shock absorber shortening jack for leakage.

(18) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(19) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(20) Restore relay box 2-123 to initial configuration.

(21) Remove safety collars from door jacks.

(22) Connect microswitch (G321) plug.

(23) Remove safety clip and tag and reset circuit breaker (G294).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(24) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(25) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Main gear and nose gear doors close.

(26) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(27) Shut-down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(28) Check shock absorber shortening jack for leakage.

D. Close-Up

(1) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated. (Gear downlocked).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors.

(4) Reset and safety O/RIDE pushbutton with snapwire, Dia. 0.50 mm (0.020 in.).

HYDRAULIC SEQUENCE VALVE - REMOVAL/INSTALLATION

R WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED
R ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH
R THE ACTUAL POSITION OF THE LANDING GEAR.

R BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A hydraulic sequence valve is fitted on each main gear leg shortening lock. It provides hydraulic supply to associated actuating cylinder when shortening lock hook is released.

2. Hydraulic sequence valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 3.50 m (11 ft.4 in)	
Hydraulic Fluid Container	
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	
R Lockwire Dia 0.8 mm (0.032 in.) R Corrosion Resistant Steel	
Hydraulic Fluid (Ref. 20-30-00, No.011)	
Common Grease (Ref. 20-30-00, No.051)	

R

B. Prepare

R (1) On First Officer's instrument panel, make certain that
R landing gear normal control lever is in NEUTRAL po-

R sition.

R (2) On centre console, make certain that landing gear and
R door Emergency control lever is in NEUTRAL position.

R (3) Depressurize Green and Yellow hydraulic systems (Ref.
R 29-11-00, Servicing and 29-21-00, Servicing).

R (4) Depressurize Green and Yellow hydraulic tanks (Ref.
R 29-13-00, Servicing).

R (5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

R (6) Install access platform.

R (7) Remove access door 732AB or 742AB.

C. Remove

(1) Disconnect hydraulic lines and cap open line ends.

(2) Cut and remove lockwire, remove attaching screws (12) retain washers (13) for reinstallation.

(3) Remove hydraulic sequence valve.

(4) Retain connecting spool (1) for reinstallation.

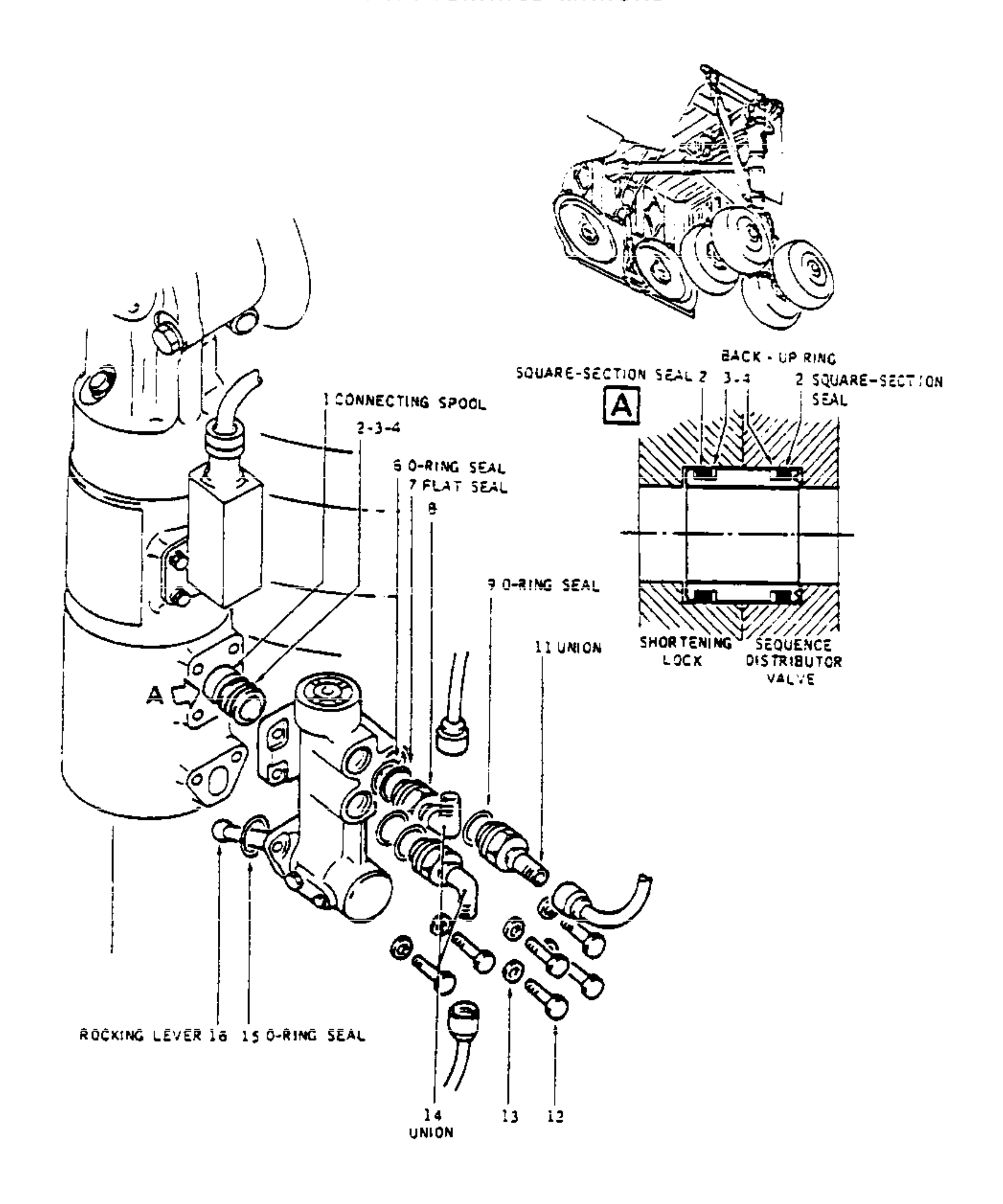
D. Preparation of replacement component

R NOTE : The following procedure covers preparation of a RH
R sequence valve. If LH sequence valve is to be repla-
R ced it shall be equipped with straight unions and
R O-ring seals only.

(1) On the removed component :

(a) Loosen lock nut (8), remove unions (14).

(b) Discard O-ring seals (6) and flat seals (7).



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R

Hydraulic Sequence Valve
Figure 401

(c) Remove union (11).

(d) Discard O-ring seal (9).

(e) On the spool (1), discard square-section seals (2) and back-up rings (3) and (4).

(2) On the replacement component

(a) Remove storage plate, and storage plugs/caps together with associated seals.

(b) Remove protective cover of rocking lever (16).

(c) Install and position below unions (14) together with new O-ring seals (6) and flat seals (7).

NOTE: Do not fully tighten lock nuts (8).

(d) Install and position union (11) together with a new O-ring seal (9).

R (e) Install square-section seals (2), together with back-up rings (3) and (4) on spool (1).

R
R

(f) On shortening lock, lubricate bore with product No.011.

(g) Insert spool (1) into shortening lock.

CAUTION: REFERENCE GROOVE FACING SEQUENCE VALVE.

(h) Make certain that O-ring seal (15) is new.

(i) Lubricate all mechanical parts of the control section with product No.051.

E. Install

(1) Position the sequence valve and engage rocking lever (16) in down position into shortening lock casing.

CAUTION: CHECK FOR CORRECT ENGAGEMENT OF THE SPHERICAL END OF ROCKING LEVER IN THE CONTROL FORK NUT.

(2) Install screws (12) and washers (13).

(3) Tighten screws (12)
R Torque to between 0.3 and 0.4 m.daN (26.552 and
R 35.403 lbf. in.).

R (4) Wirelock screws (12) (Ref. 20-21-13)

(5) Turn unions (14) to correct position.

(6) Connect hydraulic lines.

(7) Fully tighten lock nuts (8).

(8) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(9) Remove safety clips and tags and reset circuit breakers

(10) Pressurize Green and Yellow hydraulic tanks (Ref.
R 29-13-00, Servicing).

(11) Remove access platform.

F. Tests

Fully extend and retract landing gear using Normal system. Check equipment for external leakage during initial pressurization and on completion of test.

G. Close-Up

(1) Replenish the Green and Yellow hydraulic tanks as
R required (Ref. 12-12-2 Servicing).

(2) Close access doors.

SHORTENING LOCK - REMOVAL/INSTALLATION

R WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON
R THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE
R ACTUAL POSITION OF THE LANDING GEAR.

R BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The shortening lock, located on landing gear leg immediately below the retraction swelling, locks the two internal shortening rods in aligned position. Locking is mechanical, unlocking hydraulic.

2. Lock - Shortening

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183621 lbf) (R)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad-Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Safety Stay	

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 1.800 m (5 ft. 11 in.)	
Safety Barriers	
Bar - Securing	257800/78
Fixture-Adjusting	257550/78
Circuit Breaker Safety Clips	
Blanking Plugs/Caps	
Lockwire, 0.8 mm (0.032 in.) Corrosion Resistant Steel	
Brass Conical Pin, Dia. 12 mm (0.472 in.)	
Pin, Dia. 2 mm (0.078 in.)	
Common Grease (Ref. 20-30-00, No.051)	
Sealing Compound (Ref. 20-30-00, No.351)	
R R Special Materials (Ref. 20-30-00, No.119)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up the aircraft (Ref. 07-11-00).

(4) Install safety stay.

(5) Install safety barriers.

(6) Depressurize Green and Yellow hydraulic tanks

(Ref. 29-13-00, Servicing).

(7) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00 and 29-21-00, Servicing).

(8) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER		MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G	1	A 6
UC SELECTOR RAISE CONT		G	2	A 7
UC LOWER DOORS OPEN SUP		G	3	A 8
UC SELECTOR LOWER CONT		G	4	A 9

(9) On main gear secondary door, open access door 732AB or 742AB.

(10) Install tool 257800/78 between rear crank and upper end of shock absorber shortening jack.

NOTE : Adjust tool 257800/78 to allow free rotation of both end pins.

C. Remove (Ref. Fig. 401)

(1) Remove safety key from shortening lock.

(2) Disconnect and cap microswitch (9) electrical plug.

(3) Disconnect hydraulic lines from sequence valve (12).

(4) Blank off ports with appropriate caps.

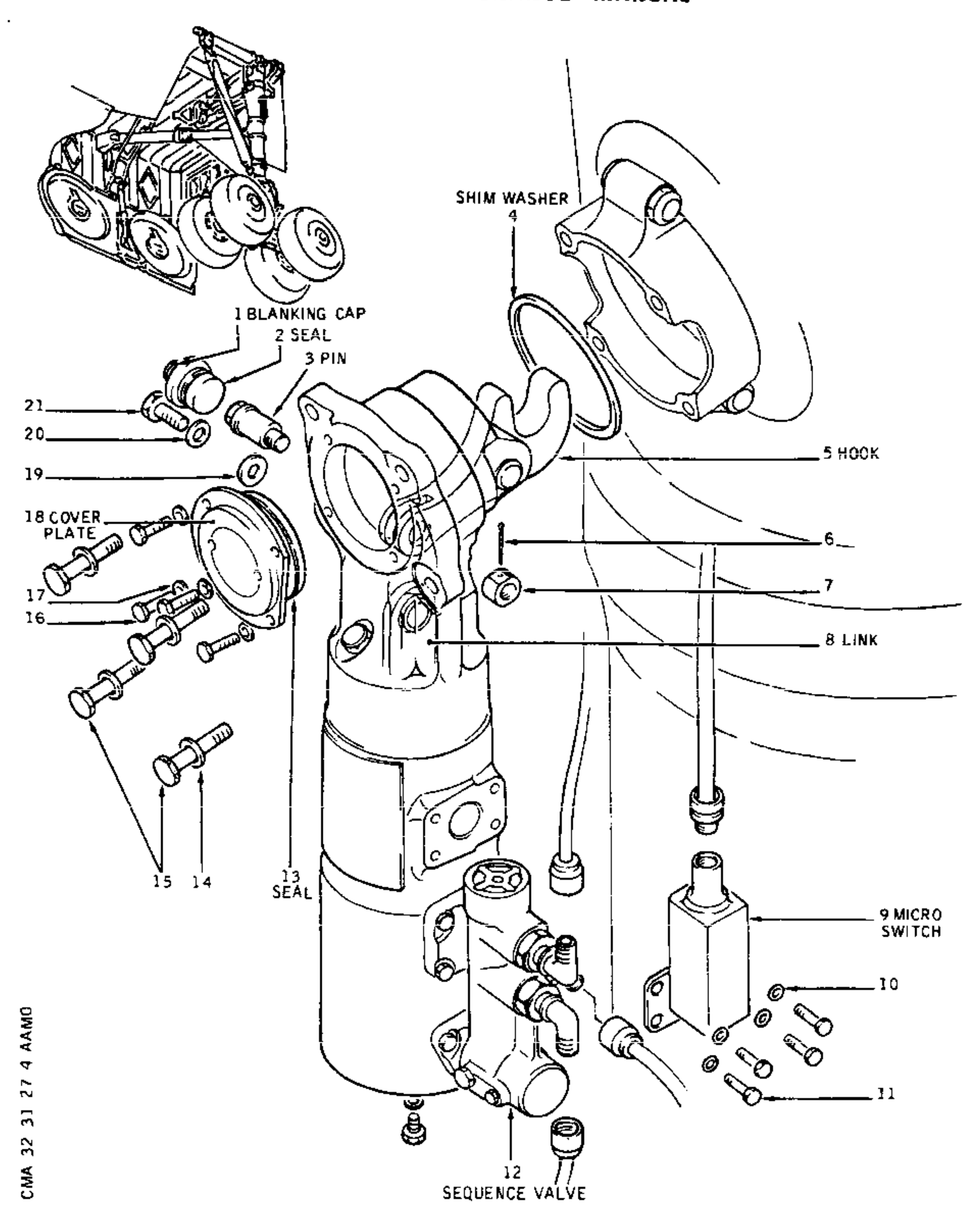
(5) Remove seals.

(6) Cut and remove lockwire, remove screws (16), and washers (17).

(7) Remove cover plate (18) by means of two 1/4" screws inserted in the threaded holes provided for this purpose.

(8) Cut and remove lockwire and gradually unscrew by 3 or 4 turns the four shortening lock assembly attach screws (15).

NOTE : The purpose of this procedure is to relieve loads on pin (3).



R

Shortening Lock
Figure 401

(9) Cut and remove lockwire, remove screw (21), and washers (20) and (19).

(10) Remove blanking cap (1) and seal (2).

(11) Remove cotter pin (6).

(12) Unscrew nut (7).

(13) Remove pin (3) connecting hook (5) and link (8).

NOTE : This pin must slide freely.

(14) Remove the four screws (15) and washers (14).

(15) Remove shortening lock assy from housing.

NOTE : During this operation the hook pivots around locking roller and adopts optimum removal position.

(16) Retain shim washer (4) and blank off lock housing located on gear leg to prevent contamination by foreign matter.

D. Preparation of Replacement Component (Ref. Fig.401 and 402)

(1) On removed shortening lock.

(a) Remove microswitch (9), screws (11), washers (10).

NOTE : The microswitch actuating roller must remain in its guide in the shortening lock.

(b) Remove sequence valve (12) (Ref. 32-31-26, Removal/Installation).

(c) Using tool 257550/78 determine shim washer (4) thickness.

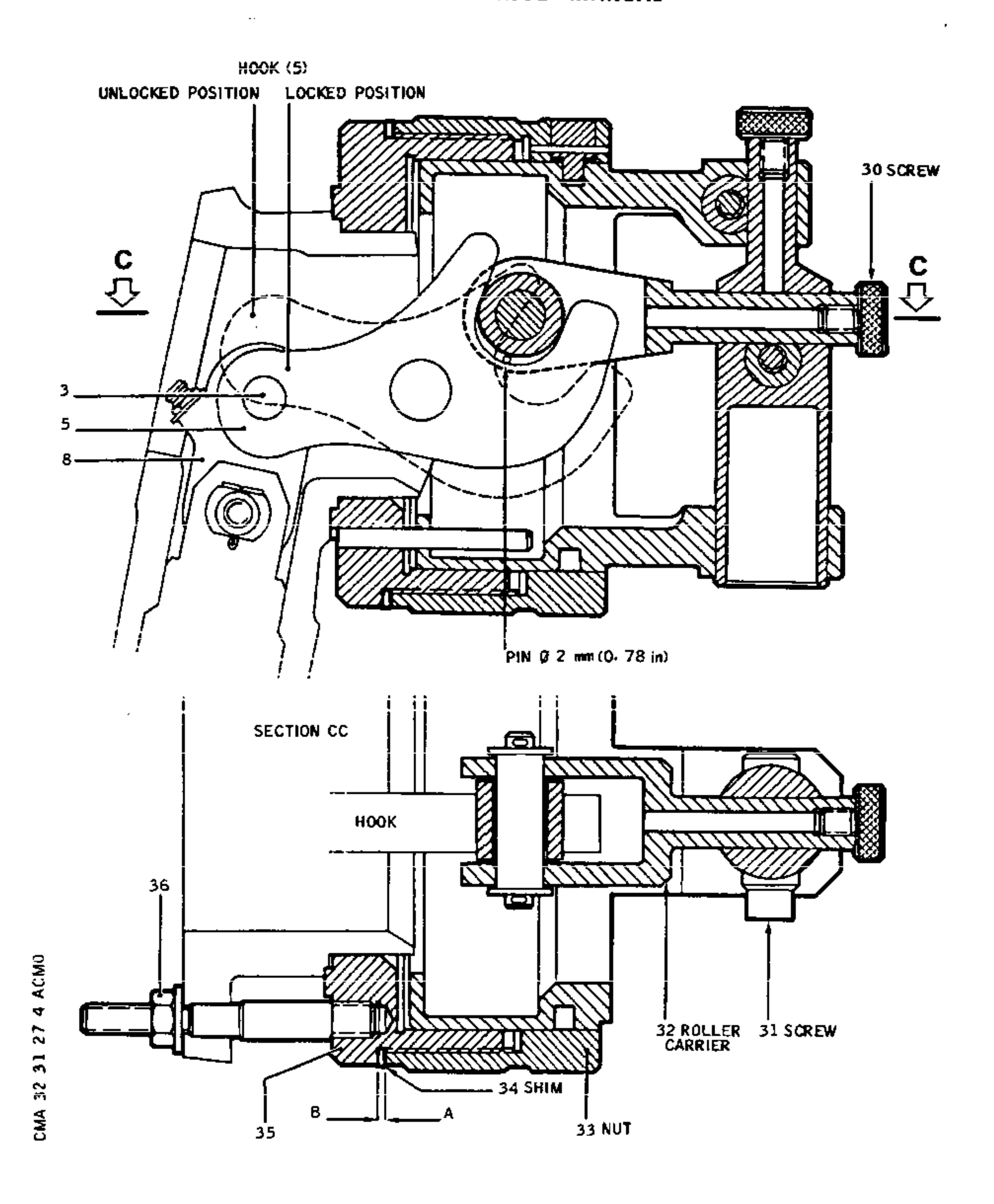
(c1) Set lock in locked position.

(c2) Disconnect hook (5) from link (8).

(c3) On tool 257550/78 free roller-carrier (32) by unscrewing screws (30) and (31).

(c4) Position tool on lock body without shim washer. Attach using nuts (36).

(c5) Unscrew nut (33) and place a 5 mm (0.196 in.)



Calibration Tool
Figure 402

shim (34) between interfaces A and B of calibration tool.

(c6) Slightly tighten nut (33) in order to maintain shim.

(c7) Position roller in lock hook and move component to locked position.

NOTE: This position is confirmed by :
- Rigging of pin (3) between hook (5) and link (8)
- Positioning of a 2 mm (0.078 in.) dia. pin between roller and bottom of hook.

(c8) Tighten roller by screwing screws (30) (31)

(c9) Loosen nut (33), remove 2 mm dia. pin remove pin (3), shim (34).

(c10) Remove tool 257550/78.

CAUTION : DO NOT CHANGE ROLLER-CARRIER POSITION AS THIS POSITION SHOWS THE INITIAL DIMENSION OF SHORTENING LOCK.

(2) On replacement lock

(a) On replacement lock, unscrew nut (33) by 3 or 4 turns and install tool 257550/78.

(b) Screw nut (33) until pin (3) can be installed on hook (5) and link (8).

(c) In this position, carefully check dimension between interfaces A and B of tool 257550/78.

(d) Remove tool.

R B (e) Compare the final dimension between interfaces A
R B & B with the thickness of shim (B4), i.e. 5 mm
R B (0.197 ins), and determine the thickness of new
R B shim washer (4), which is required to be fitted
R B with the replacement shortening lock, as
R B follows:-

R B EXAMPLE

R B Final dimension between interfaces A & B = 4.65mm (0.183 ins)

R B Original dimension between interfaces A & B = 5.00mm (0.197 ins)

R B Therefore difference between final & original dimensions = -0.35mm (-0.014 ins)

R B Dimension of original shim (4) = 2.032mm (0.080 ins)

R B Therefore dimension of new shim (4) = 2.032-0.35 = 1.682mm (0.066 ins)

R B NOTE: Conversely, if the difference between the final and original dimensions between interfaces A & B is positive, EG + 0.35mm, the original shim (4) thickness should be increased accordingly to render it compatible with the replacement shortening lock.

(f) Make certain that microswitch actuating rolller is in position in its guide. Install microswitch using washers (10) and screws (11).

NOTE : Before installing microswitch, prepare as follows :
- Apply product No.119 to the annular volume around plunger.
- Install grease retaining membrane.

Torque screws (11) to between 0.3 and 0.4 m.daN (17 and 35 lbf.in.) and wirelock (Ref. 20-21-13).

(g) Install sequence valve (12) (Ref. 32-31-26, Removal/Installation).

E. Install

(1) Remove caps from landing gear leg and check that lock housing is clean.

(2) Install new shim washer (4) the thickness of which has been previously determined.

NOTE : Coat shim washer (4) contact surface with Product No.051 in order to maintain and centre it on shortening lock body.

(3) With product No.051 grease shortening lock housing located on gear leg, the inside of hook (5) and link (8) spherical head.

(4) Progressively engage lock into its housing.

(a) Before installation, hook (5) must be completely removed from link (8).

(b) During installation check that link (8) spherical head correctly engages hook (5) fork-end.

(c) By means of a 12 mm (0.472) dia. conical brass pin, centre spherical head into hook fork-end then install pin (3).

NOTE : After this operation, the maximum permissible clearance between shim washer (4) and gear leg contact surface is 2 mm (0.078 in.).

(5) Install and tighten screws (15) fitted with washers (14).
Torque to between 2 and 3 m.daN (15 and 22 lbf.ft.).

(6) Wirelock screws (15).

NOTE : After this operation, no clearance must appear between shim washer (4) and gear leg contact surface.

(7) Screw and tighten nut (7).
Torque to between 0.5 and 0.8 m.daN (45 and 70 lbf.in.)

(8) Install and fold cotter pin (6).

(9) Install blanking cap (1) together with seal (2).

(10) Install washer (19).

(11) Install and tighten screw (21) together with washer (20).

(12) Wirelock screw (21).

(13) Grease link (8) with Product No.051.

NOTE : Grease nipple is located at link upper part.

(14) Install cover plate (18) together with seal (13).

(15) Install and tighten screws (16) together with washers (17).
Torque to between 0.3 and 0.4 m.daN (17 and 35 lbf.in.)

(16) Wirelock screws (16).

(17) Seal periphery of cover plate (18) with Product No.351.

(18) Connect hydraulic lines to sequence valve (12).

(19) Connect electrical plug to microswitch (9).

(20) Install safety key on shortening lock.

(21) Remove tool 257800/78.

(22) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(23) Remove access platform.

(24) Remove safety clips and tags and reset circuit breakers.

(25) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

F. Tests

Carry out a Normal landing gear retraction and extension sequence (Ref. 32-31-00, Adjustment/Test).

Replacement shortening lock shall be checked for leakage at first hydraulic pressurization and on completion of tests.

G. Close-Up

(1) Top up Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) Close access doors 153AB, 151CB and 732AB or 742AB.

(3) Remove safety barriers. Check that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

3. Replacement of Microswitch (G63 - G64)

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Access Platform 3.22 m (10 ft. 7 in.)	
Lockwire - Dia. 0.8 mm (0.032 in) (Corrosion Resistant Steel)	
R R Special Materials (Ref. 20-20-00, No.119)	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH UC WEIGHT SW "A" SYS SUP	1-213	G 292	M17
RH UC WEIGHT SW & DOWN-LOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWN-LOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap microswitch electrical plug.

(2) Cut and remove lockwire, remove screws (11) and retain washers (10) for reinstallation. Remove microswitch.

CAUTION : MAKE CERTAIN THAT MICROSWITCH ACTUATING ROLLER REMAINS IN ITS GUIDE IN THE SHORTENING LOCK.

D. Preparation of Replacement Component

R If a new microswitch is to be installed, prepare as follows:
R - Apply product No.119 to the annular volume around plunger.
R - Install grease retaining membrane (supplied in a special
R bag with microswitch).

E. Install

(1) Make certain that microswitch actuating roller is in position in its guide.

(2) Install microswitch by means of screws (11) and washers (10).
Torque screws (11) to between 0.3 and 0.4 m.daN (17 and 35 lbf.in.).

(3) Safety screws (11) with lockwire.

(4) Connect electrical plug to microswitch.

F. Tests

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Remove safety clips and tags and reset the circuit breakers.

(3) Test microswitch (G63)

(a) Check that there is 28VDC between test connector UT1838-11 terminals A and D (door 123AB, relay box 3-123).

(4) Test microswitch (G64)

(a) Check that there is 28VDC between test connector UT1838-13 terminals A and D (door 123AB, relay box 3-123).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Close access doors and remove access platform.

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END OF THIS SECTION

NEXT

MAIN LANDING GEAR TELESCOPIC BRACE STRUT - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The telescopic brace strut ensures lateral bracing of the landing gear leg when the landing gear is in the downlocked configuration. The telescopic brace strut is locked in the fully expanded position by an internal locking mechanism. Locking is automatic and mechanical. Unlocking is hydraulic. During Ultimate Emergency landing gear extension a nitrogen source enables the telescopic brace strut to function as a pneumatic actuating cylinder.

RB It is a requirement on a scheduled M.L.G change to remove telescopic
RB brace strut so that the spherical bearing end fitting and locknut to-
RB gether with aircraft structural hinge shear holding bolt (Fig.402,item41)
RB may be N.D.T magnetic particle checked.

2. Main Landing Gear Telescopic Brace Strut

A. Equipment and Materials

DESCRIPTION	PART NO.
- Jack Lifting Capability Greater than 81600 daN (183261 lbf)	07-10-0001
- Safety Jack Adapter	D920113200

DESCRIPTION	PART NO.
- Jacking Pad - Nose	D925370000
- Balancing Device - Pyramid Adapter, LH	D921485000
- Balancing Device - Pyramid Adapter, RH	D921485001
- Pyramid Adapter - Lifting, LH	D924008000
- Pyramid Adapter - Lifting, RH	D924008001
- Safety Stay	
- Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
- Electrical Ground Power Unit	
- Access Platform 3.282 m (10 ft. 9 in.)	
- Safety Barriers	
- Safety Collars - Main Landing Gear Door-Actuating Cylinder	D921317000
- Beam Assy - Main Landing Gear Telescopic Strut	D930702000
- Trolley - Main Landing Gear Telescopic Strut	D930703000
- Beam Assy - Main Landing Gear Telescopic Strut Extension/Retraction	D930705000
- Safety Sleeve - Nose Landing Gear Door	E925002000
- Extractor	D46064
- Wrench - Tenoned Socket	172900/78
- Wrench - Pin	D47194
- Extractor	249000/78-A
- Guide Assembly	D47196

DESCRIPTION	PART NO.
- Wrench - Tenoned Socket	D47195
- Wrench - Pin Socket	172800/78A
- Wrench - Castellated	D46446
- Wrench - Tenoned	256600/78
- Torque wrench	
- Clinometer	
- Circuit breaker safety clips	
- Blanking Plug/Cap	
- Lockwire - Dia. 0.8 mm (0.032 in.) Corrosion Resistant Steel	
Common Grease (Ref. 20-30-00, No.051)	
Common Grease (Ref. 20-30-00, No.054)	
Sealing Compound (Ref. 20-30-00, No.351)	
Common Grease (Ref. 20-30-00, No.059)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Transversal levelling of aircraft (Ref. 08-11-00).

(5) Install safety stay.

(6) Position safety barriers.

(7) Make certain that visor is not uplocked.

(8) Connect electrical ground power unit and energize

the aircraft electrical network (Ref. 24-41-00, Servicing).

(9) Connect hydraulic ground power unit to Green hydraulic system.

(10) Remove safety device from telescopic brace strut to be removed ; the other safety devices remain in position on the landing gear.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR TRAVEL RANGES ARE CLEAR.
ADJUST HYDRAULIC GROUND POWER UNIT DELIVERY TO MINIMUM PRESSURE AND FLOW.

(12) On First Officer's instrument panel, place landing gear Normal control lever in UP position and return it to NEUTRAL as soon as brace strut is unlocked.

(13) Shut down Green hydraulic sytem (Ref. 29-11-00, Servicing).

(14) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(15) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(16) Install safety collars on door actuating jacks.

(17) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-123	G 51	N16
UC DOWNLOCK VISUAL IND	3-213	G 241	C 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(18) Display a warning notice in the flight compartment.

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(19) Place nose and main landing gear door operating handles in "open" position : HANDLE LOCKED, INDICATOR PLATE SHOWING RED.

(20) Not applicable.

C. Remove
(Ref. Fig.401 and 402)

(1) On telescopic brace strut side, disconnect hydraulic supply line from telescopic brace strut unlocking device and cap open line end.

(2) On telescopic brace strut side, disconnect line from Ultimate Emergency locking device and cap open line end.

(3) On structure side, disconnect electrical connector and cap.

(4) Install tool D930702000 on aircraft.

(a) Installation and operation of beam assemblies D930702000 and D930705000.
(Ref. Fig.403 and 404)

(a1) Install suspension assembly (2) on structural bracket (1).

(a2) Install monorail assembly (3) on suspension assembly (2) and on lug attached to RIB22 above the landing gear leg.

(a3) Install clamps (7) and (8) on telescopic brace strut (6).

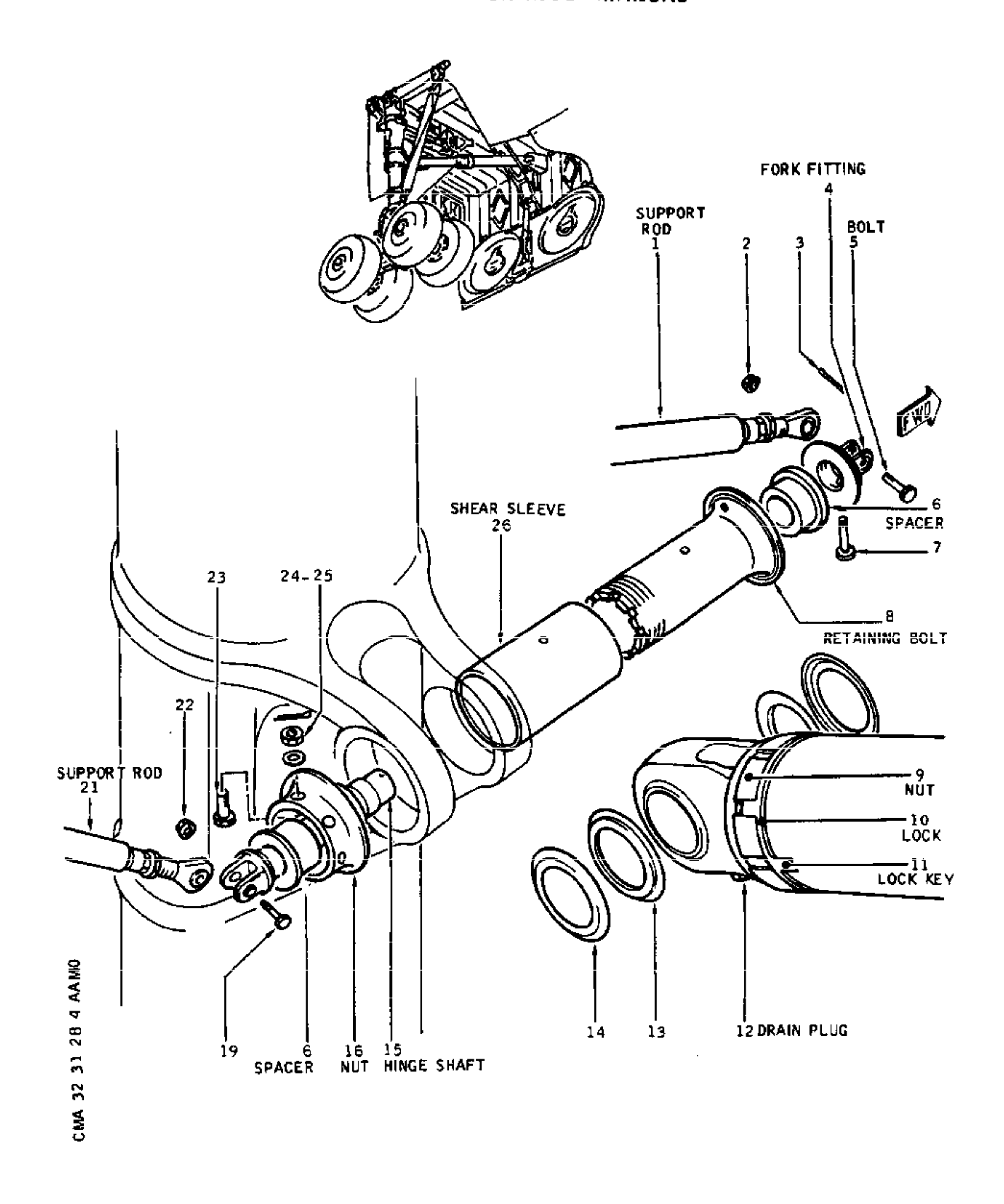
(a4) Install mini hoists (5) and attach cables to corresponding clamps (7) and (8).

(a5) Install beam assembly (10) on clamps (7) and (8).

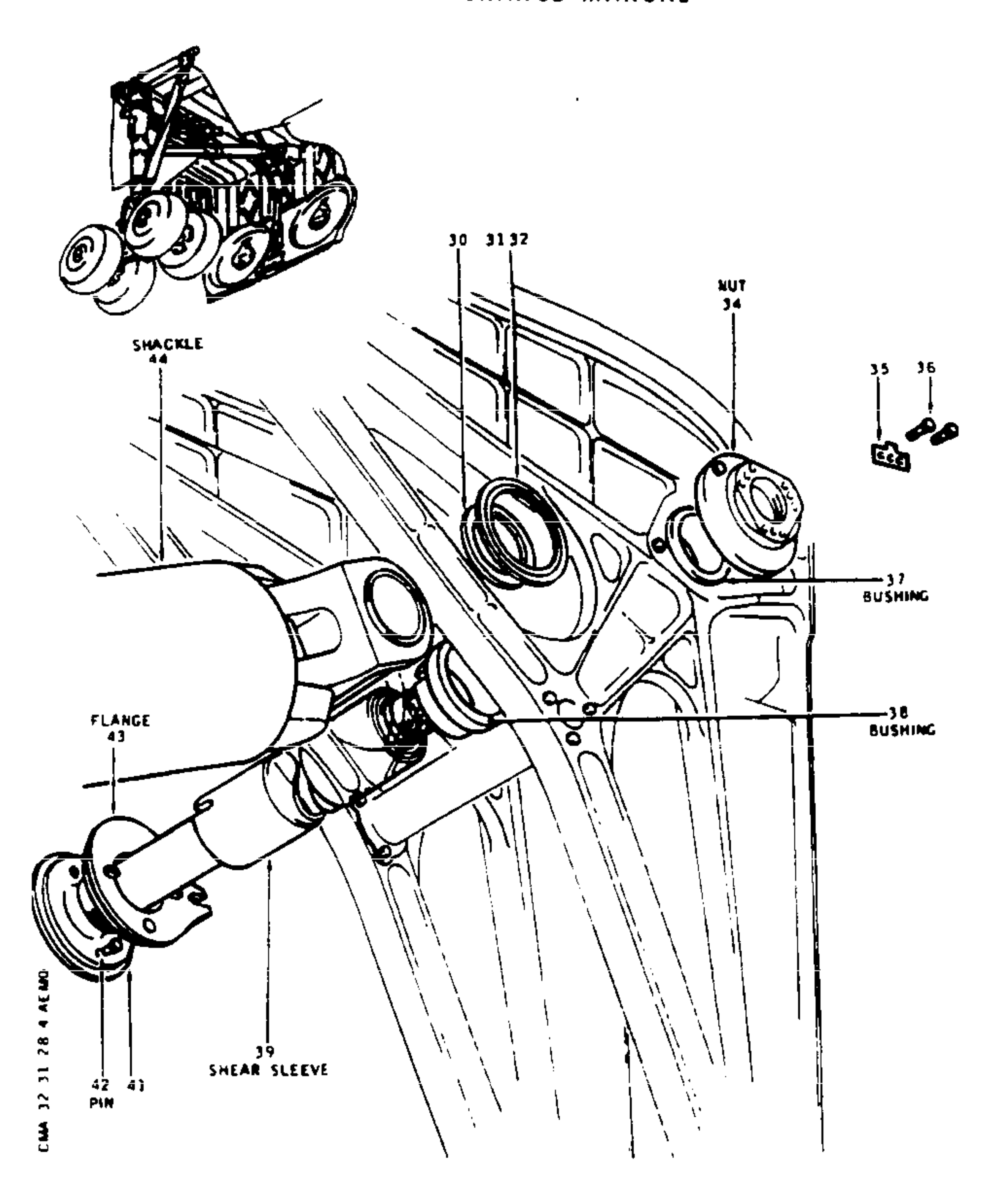
(a6) Position clamps (13) on telescopic brace strut sliding tube end fitting.

(a7) Operate handle (11) and bring beam assembly (10) fork (12) level with clamp (13).

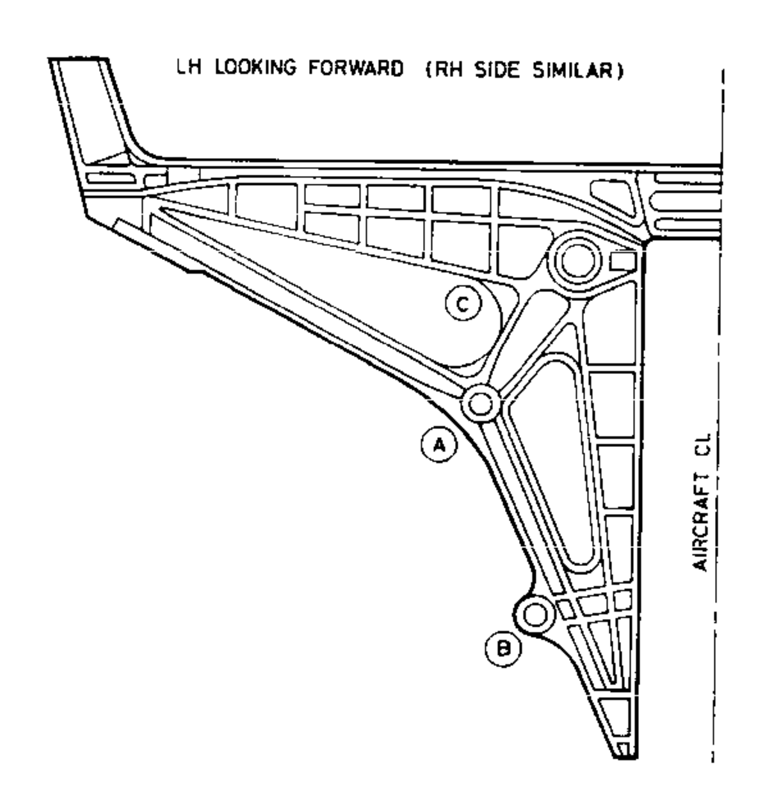
(a8) Attach beam assembly (10) fork (12) to clamp (13).



R Telescopic Brace Strut/Gear Leg Hinge Shaft
Figure 401



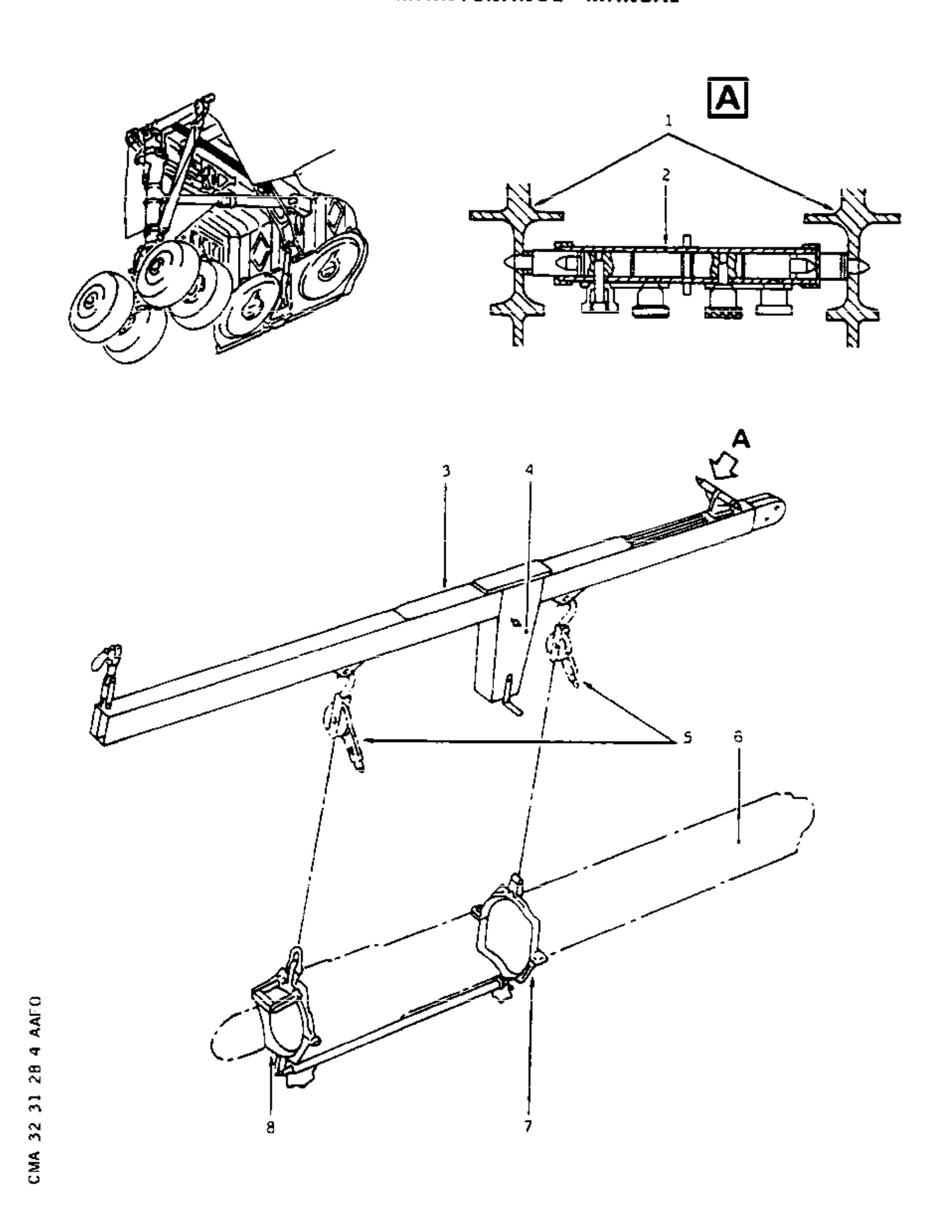
RB Telescopic Brace Strut/Structure Hinge Shaft Sheet 1 of 2
Figure 402



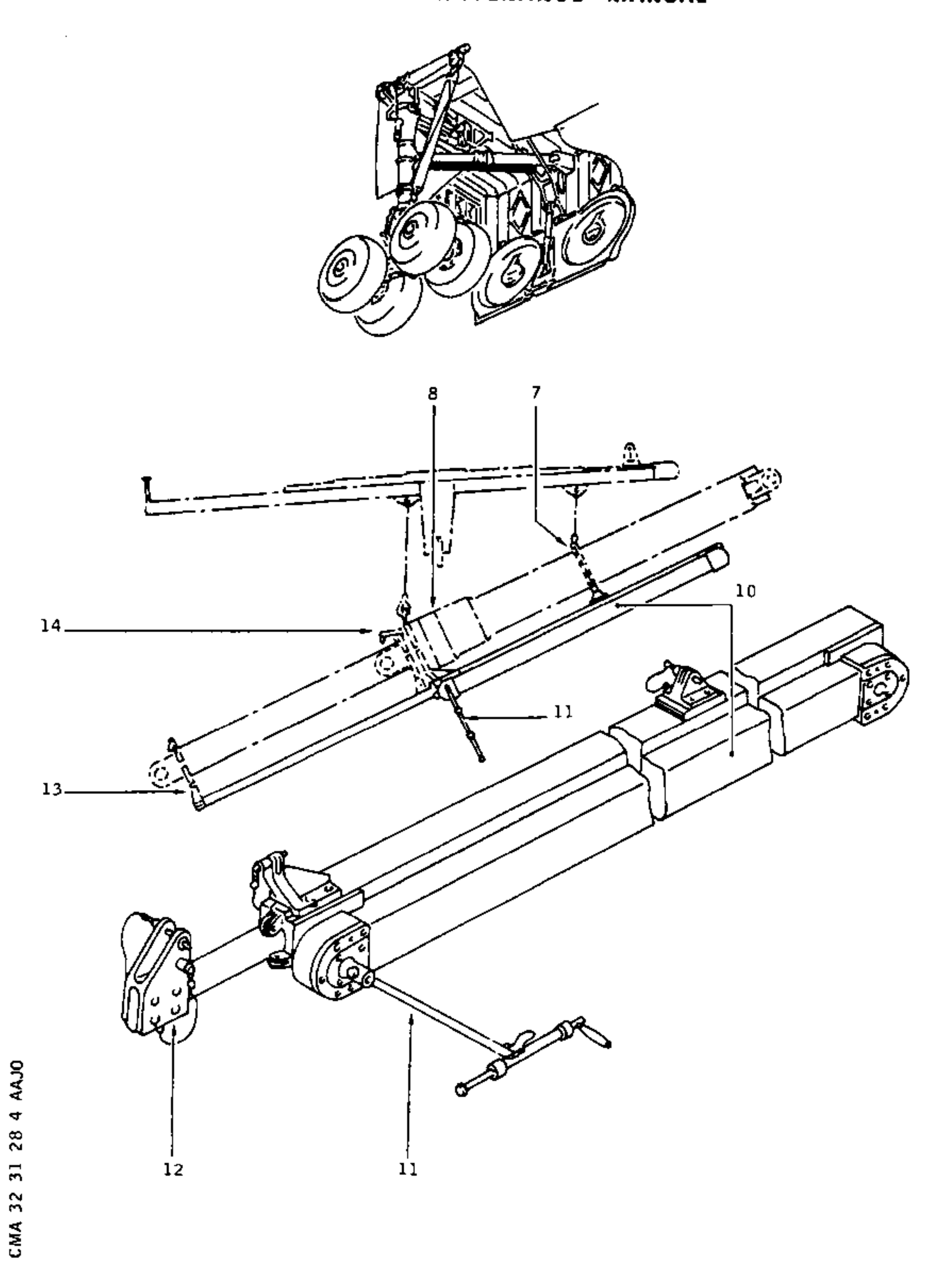
Telescopic Brace Strut/Structure Hinge Shaft Sheet 2 of 2
Figure 402

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Beam Assembly D930702000
Figure 403



Beam Assembly D930705000
Figure 404

(a9) Operate handle (11) to fully retract the telescopic brace strut and lock sliding tube in fully retracted position with lock lever (14).

NOTE : Handle (11) is used to retract or extend the telescopic brace strut lifting and lowering of the telescopic brace strut is performed with the brace strut locked in the fully retracted position by means of lock lever (14).

(a10) The telescopic brace strut is lifted and lowered by operating the mini hoists (5).

NOTE : Trolley (4) is used to guide the telescopic brace strut during lowering and lifting operations and to position the strut for installation.

(5) On telescopic brace strut-leg hinge.

(b) Remove self locking nuts (2) and (22).

(b) Remove bolts (5) and (19).

(c) Remove support rods (1) and (21).

(d) Remove cotter pin (3) and remove pin (7).

(e) Remove fork fitting (4).

(f) Remove hinge shaft (15) and retain spacers (6) for reinstallation.

(g) Loosen nut (16) with tools D47194 and D47195.

(h) With tool 249000/78A, remove retaining bolt (8), and shear sleeve (26).

(j) With tool D930705000, compress telescopic brace strut.

(k) Recover seal retainers (14) and seals.

(l) Make certain that the bushings remain in the bore of the leg fork fitting.

(6) On telescopic brace strut - aircraft structure hinge (Ref. Fig. 402)

(a) Cut and remove lockwire, remove screws (36), and retain lock plate (35) for reinstallation.

(b) Remove nut (34) using wrenches 172800/78A and 172900/78.

CAUTION : MAKE CERTAIN THAT TELESCOPIC BRACE STRUT IS SECURELY SUPPORTED.

(c) Using extractor D46064, remove holding pin (41) and shear sleeve (39).

NOTE: The extractor enables pin (41), shear sleeve (39) and flange (43) to be extracted simultaneously. These components to be retained with removed strut assembly.

(d) With tool D93070200 remove telescopic brace strut and place it on handling trolley D930703000.

(e) Retain friction rings (30), rings (31) and bushings (32) for reinstallation.

(f) Make certain that bushes remain in place in shackle (44) bore.

RB (g) Perform detailed inspection of lugs (marked A, B
RB and C on Figure 402) and carry out NDT Inspection
RB Technique K57-U-41.

(h) Make certain that bushings (37) and (38) remain in place on structure bracket bore.

D. Preparation of Replacement Component

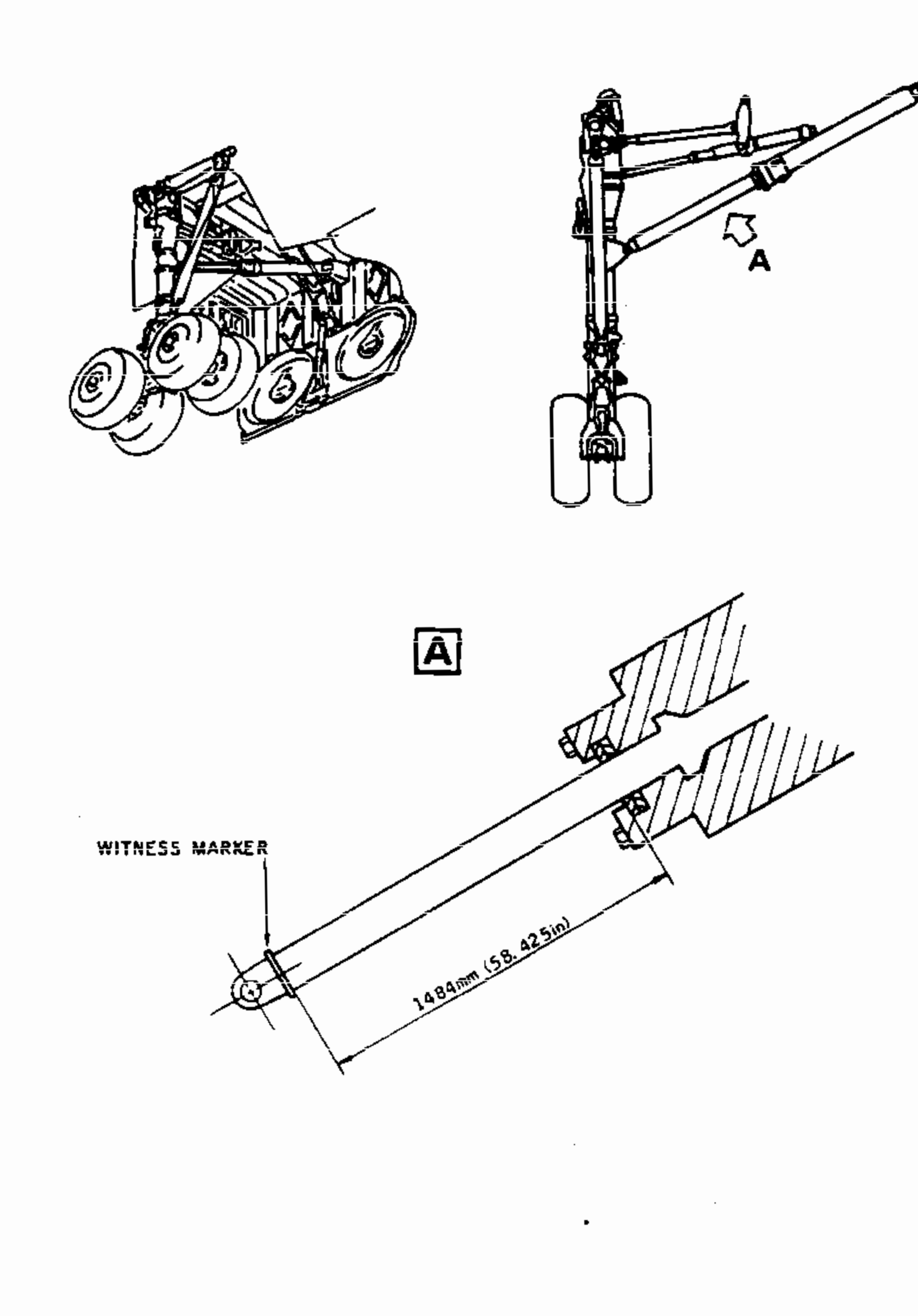
(1) Carry out a preadjustment on replacement strut by tightening (or loosening) the adjustable end fitting to obtain length of thread apparent equal to that on removed telescopic brace strut. (Wrenches D46446 and 256600/78).

NOTE: Strut is adjusted to the nearest half rotation, taking care that the drain plug remains at the bottom.

(2) Extend strut rod fully, using tool D930705000, without locking it.

E. Install
(Ref. Fig. 401, 402 and 405)

NOTE: All seals of the different hinge components are to be replaced.



Telescopic Brace Strut - Adjustment
Figure 405

(1) Place telescopic brace strut on handling trolley D930703000.

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(2) Attach tool D930702000 to telescopic brace strut.

(3) Using tool D930702000 position telescopic brace strut.

(4) Telescopic Brace Strut - Aircraft Structure Hinge

(a) Make certain that bushes are in place in strut shackle (44) bore.

(b) Lubricate shackle (44) sides and bushes (Product No.051).

(c) Install friction rings (30), rings (31) and bushings (32) on either side of shackle. Make certain they are centred.

NOTE : - Check that bushings (37) and (38) are in place and fully in.
- Lubricate bushing bores (Product No.051).
- Make certain that bushing (37) is immobilized in rotation by the spigot integral with the bracket.
- Make certain that bushing (38) notches are aligned with the spigot integral with bracket.

(d) Engage shackle (44) fitted with its washers, rings and bushings on bracket. Make certain it is centred.

(e) After making certain that holding pin (41) is fitted with its seal and locking pin (42), insert flange (43) with its seal. Position flange on holding pin with locking pin (42).

(f) Lubricate shear sleeve (39) bore and holding pin (41) bearing surfaces with products No.059 and 051 successively.

(g) Insert holding pin (41) fitted with flange (43) in shear sleeve (39).

NOTE : Make certain that flange (43) lugs engage the notches designed on the edges of shear sleeve (39).

(h) Insert the shear sleeve (39)/holding pin (41) assembly into bracket/shackle bore.

NOTE : Install with head of holding pin (41) towards the front of the aircraft.

Check that flange (43) notch engages properly spigot integral with bracket. Fully insert pin assembly.

(i) Make certain that new seals are fitted on nut (34).

(j) Grease thread of holding pin (41) (Product No.054)

(k) Tighten nut (34) using wrenches 172800/78A and 172900/78.
Torque to between 10 and 20 m.daN (73.756 and 147.512 lbf.ft.).

(l) Install lock plate (35) with screws (36).

NOTE : The torque tolerance should permit installation of lock plate (35).
If this is impossible, take a new plate and cut it to size.

(m) Wirelock screws (36) (Ref. 20-21-13).

(n) Install a sealing bead (Product No.351) around nut (34).

(5) Telescopic Brace Strut - Gear Leg Hinge

(a) Grease telescopic brace strut spherical bearing (Product No.054).

(b) Make certain that bushings are in position in bore of gear leg fork fitting.

(c) Lubricate inside of gear leg fork fitting (Product No.051).

(d) Simultaneously insert adjustable end of telescopic brace strut and seal-retainers (14) with their seals (13) in fork fitting.

NOTE : Be careful about the fitting of lip seals. Centre telescopic brace strut spherical bearing.

(e) Grease shear sleeve (26) with products No.059 and 051.

(f) Using guide assembly D47196 install shear sleeve (26), and retaining bolt (8) fitted with its seal, in fork fitting/spherical bearing assembly.

NOTE : Install with the head of the holding pin towards the front of the aircraft.

(g) Remove guide assembly.

(h) Grease the thread of retaining bolt (8) with Product No.054.

(i) Install nut (16) using wrenches D47194 and D47195

NOTE : Do not fully tighten nut (16) at this stage. This operation will be carried out after the geometry of the gear has been checked.

(6) Remove tool D930702000

(7) Connect hydraulic lines.

(8) Connect Ultimate Emergency downlocking line.

(9) Connect electrical connector.

(10) Install a witness marker (1mm (0.039 in.) nylon thread or elastic band) around telescopic brace strut sliding tube approximately 50 mm (1.968 in.) from sliding tube lower end.

(11) Remove safety clips and tags and reset circuit breakers.

(12) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(13) If both main landing gears are to be retracted remove landing gear and shortening mechanism safety devices.

(14) Not applicable.

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing). Adjust ground power unit delivery to permit a slow landing gear retraction.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(16) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(17) With gears uplocked, place landing gear Normal control lever in DOWN position.

(18) With gears downlocked shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(20) On First Officer's instrument panel, on gears position indicating unit, make certain that the four green arrows are illuminated. (Gears downlocked).

(21) If both main landing gears were retracted install landing gear and shortening mechanism safety devices.

(22) Not applicable.

(23) Not applicable.

(24) Measure distance between witness marker and lower end of telescopic brace strut body at sliding tube. This distance must be 1484 mm (58.425 in.)

(25) If necessary adjust telescopic brace strut spherical bearing end fitting to obtain this setting (having removed the pins from the leg side).

NOTE : Use beam assembly D930702000.
Drain plug (12) should be positioned downwards.

(26) Install lock key (11).

NOTE : If key housings on leg and on end fitting do not correspond, turn strut rod (wrenches 256600/78 and D46446) until alignment is achieved, by choosing the nearest notch on the rod.

(27) With the climometer installed on the shock absorber, measure the tilt of the gear leg.

NOTE : Telescopic brace strut maximum travel shall not exceed 1484 mm (58.425 in.) to prevent brace strut piston bottoming during retraction. A landing gear leg positive rake of +15 minutes (leg inclined towards aircraft centreline) is therefore permissible.

(28) A negative rake is not permissible. If necessary reduce telescopic brace strut travel to bring landing gear leg perpendicular to aircraft horizontal datum.

NOTE : One complete rotation of the adjustable end

fitting modifies the angular position (rake) of the landing gear leg by 0°5'.

(29) Tighten nut (9) using wrenches 256600/78 and D46446. Torque to between 30 and 50 m.daN (221 and 368.781 lbf.ft.)

(30) Fold over lock (10) in its housing on nut (9).

(31) On telescopic brace strut/leg attachment.

(a) Fully tighten nut (16) using wrenches D47194 and D47195.
Torque to between 1 and 3 m.daN (7.375 and 22.126 lbf. ft.).

(b) Safety nut (16) with pin (23), washer (25) and nut (24).
Torque nut (24) to between 0.3 and 0.5 m.daN (26.552 and 44.253lbf in.). Safety nut (24) with a cotter pin.

(c) Install spacers (6) in retaining bolt (8).

(d) Insert hinge shaft (15) in retaining bolt (8) bore.

NOTE : Hinge shaft (15) shall be positioned towards the front of the aircraft.

(e) Install fork fitting (4).

(f) Insert pin (7).

(g) Install cotter pin (3).

NOTE : Position hinge shaft (15) fork fitting so as to be able to insert support rods (1) and (21) of secondary door upper attachment clamp.

(h) Insert pins (5) and (19).

(i) Fully tighten self locking nuts (2) and (22).

(32) Check and top up downlock system fluid level. Filler plug located on the side at the level of the ground locking key.

(33) If installed, remove tool D930702000.

(34) Check tension of external linkage spring rod (Ref. 32-11-35, Inspection/Check).

(35) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make particularly certain that no trace of hydraulic fluid remains.

(36) Remove safety collars.

(37) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(38) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(40) Close landing gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(41) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(42) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(43) Remove access platform.

F. Test

(1) Carry out a Normal landing retraction and extension. (Ref. 32-31-00, Adjustment/Test).

(2) Check component for external leakage at first pressurization and on completion of test.

R B

B (3) Carry out Normal landing retraction and extension
B (Ref. 32-31-00 Adjustment/Test).

B (4) Carry out free-fall of main landing gear (Ref.
B 32-33-00 Adjustment/Test).

B (5) Carry out Normal landing retraction and extension
B (Ref. 32-31-00 Adjustment/Test).

R B

B (6) Check operation of downlock visual indicator
B installed on telescopic brace strut.

(a) Open access door 233BF.

(b) Press pushbutton G 243 or G 244 corresponding to replaced telescopic brace strut.

(c) Make certain that a luminous red spot and luminous white beam are visible on the corresponding brace strut indicator.

(d) Close access door 233BF.

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks if necessary (Ref. 12-12-29).

(2) Disconnect hydraulic ground power unit.

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Close access doors.

(5) Remove safety barriers and check that area under the aircraft is clear.

(6) Remove safety stay.

(7) Lower the aircraft onto its wheels.

3. Replace Microswitch (G23, G24, G53, G54)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Access Platform 3.22 m (10 ft. 7 in.)	
Electrical Ground Power Unit	
Lockwire-Corrosion Resistant Steel, Dia. 0.60 mm (0.024 in.)	
Special Materials (Ref. 20-30-00, No. 119)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

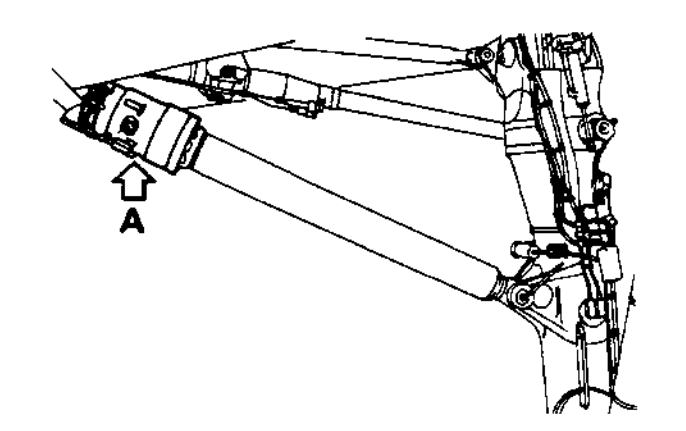
(3) Trip, safety and tag the following circuit breakers :

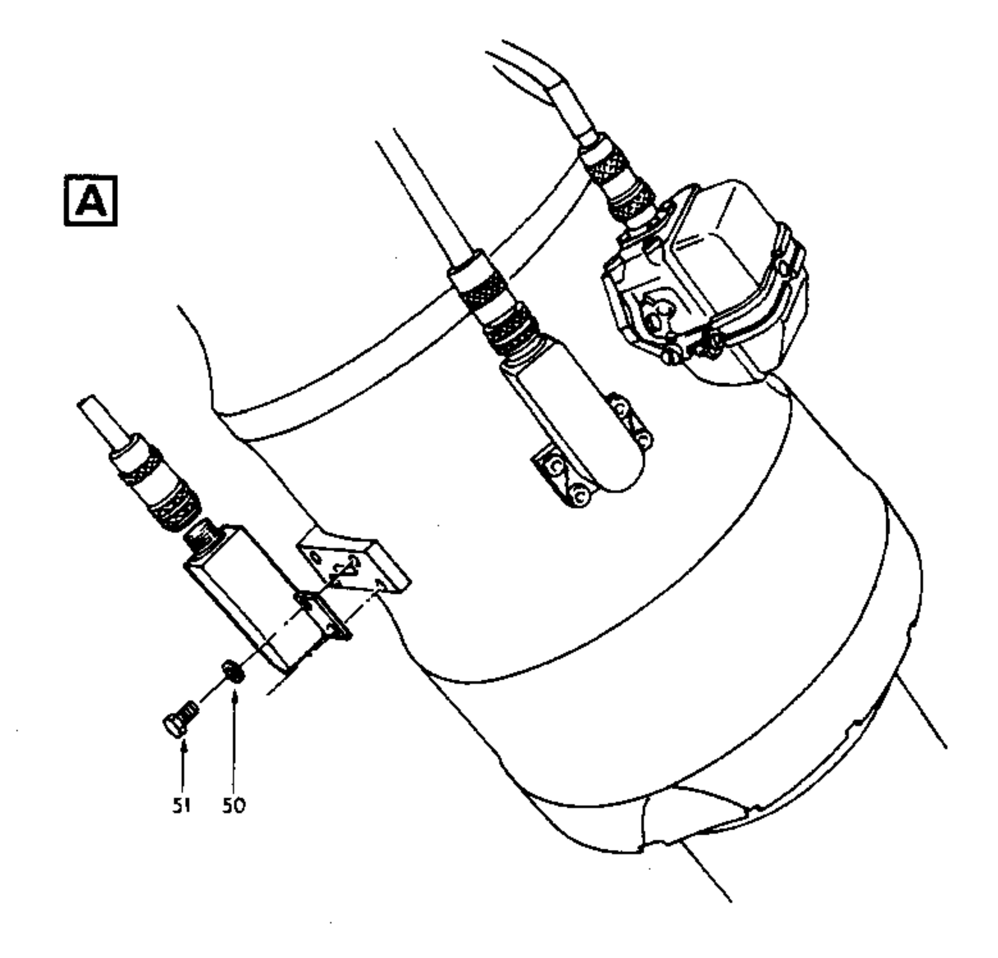
SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP	1-213	G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(4) On centre console, make certain that ADC1 and ADC2 switches are in OFF position.

C. Remove (Ref. Fig. 406)

(1) Disconnect and cap microswitch electrical plug.





CMA 32 31 28 4 AJM0

Microswitches
Figure 406

(2) Cut and remove lockwire, remove screws (51) and retain washers (50) for reinstallation.
Remove microswitch.

CAUTION : SECURE ACTUATING ROLLER TO PREVENT IT FALLING.

D. Preparation of Replacement Component

If a new microswitch is to be installed, prepare as follows :
- apply product No. 119 to the annular volume around plunger
- install grease retaining membrane (supplied in special bag with microswitch)

E. Install

(1) Make certain that microswitch actuating roller is inserted in its guide.

(2) Install microswitch with screws (51) and washers (50). Wirelock screws in pairs.

(3) Connect electrical plug.

F. Test

(1) Test microswitches (G53-G54)

(a) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(b) Remove safety clips and tags and reset circuit breakers.

(c) On First Officer's instrument panel, on gears position indicating unit, make certain that green RH or LH arrow is on.

(d) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Test microswitches (G23-G24)

(a) Connect electrical ground power unit and energize the aircraft electrical network. (Ref. 24-41-00, Servicing).

(b) Remove safety clips and tags and reset circuit breakers.

(c) Make certain that visor is not uplocked.

(d) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(e) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(f) Open main gear doors by operating handle located on LH main landing gear leg.

(g) Close doors by operating handle located on LH main landing gear leg. Install locking cap.

(h) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(i) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Close access doors.

MAIN GEAR TELESCOPIC BRACE STRUT - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Inspection and check of telescopic brace strut locking system lubrication fluid level.

2. Check of Locking System Oil Level

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 1.80 m (5 ft.11 in)	
Lockwire dia. 0.80 mm (0.032 in)(Corrosion Resistant Steel)	
Hydraulic Fluid Container	
Hydraulic Fluid (Ref. 20-30-00, No.011)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Check that landing gear Normal control lever is in NEUTRAL position.

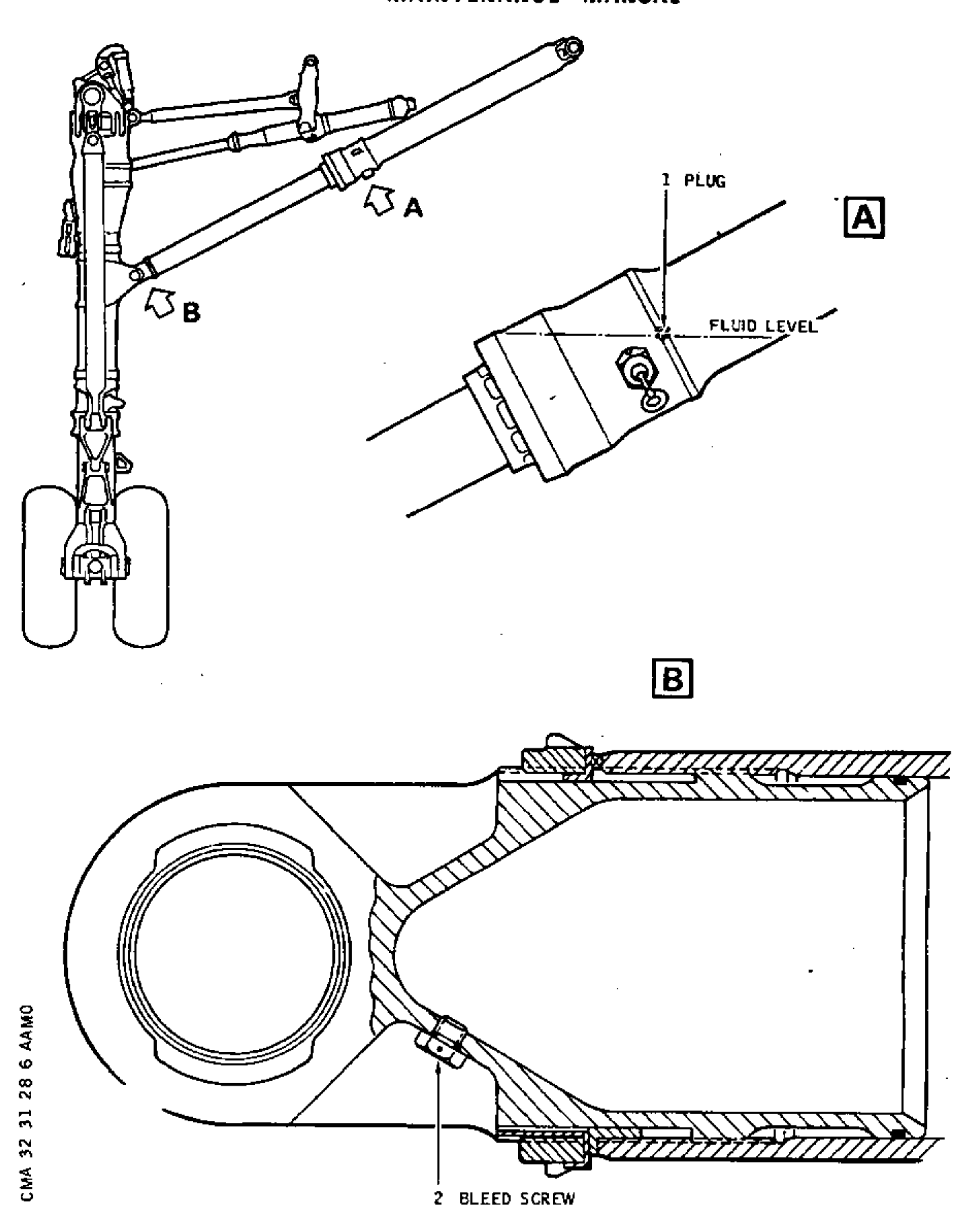
(3) Display warning notice in flight compartment.

C. Check
(Ref. Fig. 601)

(1) Cut and remove lockwire. Remove bleed screw (2) located at the bottom of brace strut rod end.

NOTE : This operation is intended to bleed completely any fluid which could have been lodged inside the rod during the various brace strut handlings

(2) After complete drainage, install and tighten bleed screw (2) equipped with a new seal and wirelock.



Telescopic Brace Strut Locking System Lubrication
Figure 601

(3) Check and correct lubrication fluid level.

(a) Cut and remove lockwire, remove plug (1).

(b) Inject Product No.011 until it overflows.

NOTE : If it is a complete replenishment, the necessary quantity is about 3 litres.

(c) Tighten plug (1) equipped with new seal and wire-lock.

D. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that trace of hydraulic fluid remains.

(2) Remove access platform.

(3) Remove warning notice from flight compartment.

MAIN GEAR AND DOOR SAFETY ELECTROVALVE- REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main gear and door safety electrovalve isolates the landing gear extension system if the visor is uplocked and the landing gear retraction system if the landing gear shock absorbers are compressed. The main gear and door safety electrovalve is located in the hydraulics bay, access door 151 DB.

2. Safety Electrovalve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.22m (10ft.7in.)	
Circuit Breaker Safety Clips	
Hydraulic Fluid Container	
Blanking Plugs/Caps	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breaker

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(4) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Depressurize Green hydraulic system tank (Ref. 29-13-00, Servicing).

(6) Open access door 151 DB.

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

(2) Mark, disconnect and cap hydraulic lines.

(3) Remove screws (2) Retain washers (1) for reinstallation. Remove electrovalve.

D. Preparation of Replacement Component

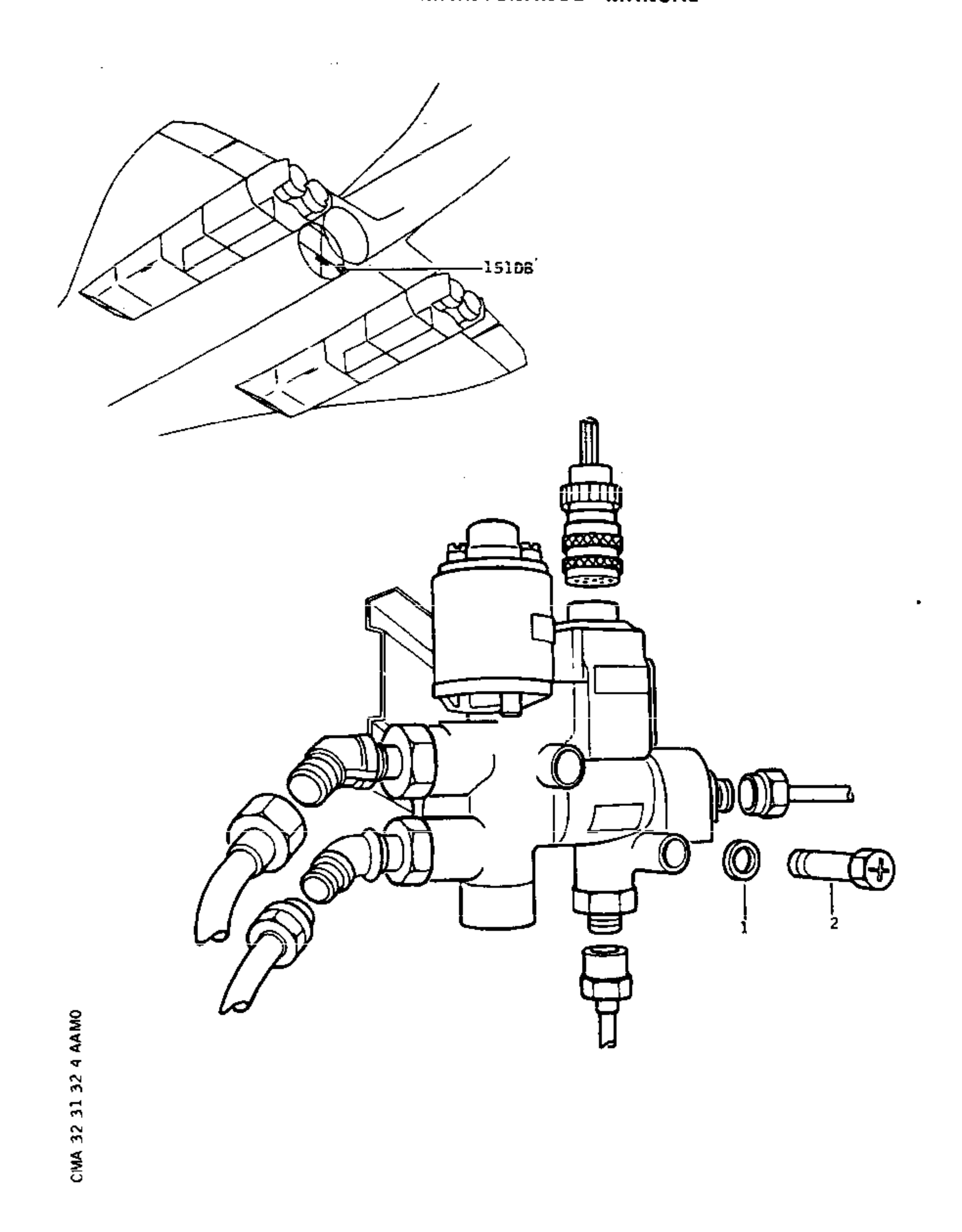
NOTE : The safety electrovalve is filled with hydraulic fluid No.011 (Ref. 20-30-00).

On removed electrovalve, remove hydraulic line unions and install on replacement electrovalve with new seals. Do not tighten elbow unions.

E. Install

(1) Position electrovalve and install using screws (2) and washers (1).

(2) Connect hydraulic lines in accordance with marking



Safety Electrovalve
Figure 401

made during removal.

(3) Tighten elbow unions.

(4) Connect electrical connector.

(5) Remove safety clip and tag and reset circuit breaker.

F. Test

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(3) Pressurize Green hydraulic system tank (Ref. 29-13-00, Servicing).

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Place droop nose and visor in up position (Ref. 27-62-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Place operating handle located on LH main landing gear leg in doors open position ; indicator plate showing red.

(8) The doors do not open.

(9) Place operating handle on LH main landing gear leg in closed position; indicator plate showing white.

(10) Lower visor and droop nose (Ref. 27-62-00, Servicing).

(11) Place operating handle on LH main landing gear leg in doors open position ; indicator plate showing red.

(12) The doors open.

(13) Close gear doors by operating handle located on LH main landing gear leg ; indicator plate showing white.

(14) During test, check electrovalve for external leakage.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Close access door 151 DB.

LANDING GEAR DOOR GROUND OPENING CONTROL UNIT REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. Control Unit - Nose Landing Gear Door Ground Opening

A. General

The control unit serves to open the nose landing gear doors on the ground. The control unit is located on nose landing gear RH side to the rear of the steering jack.

B. Replace Control Unit

(1) Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	

(2) Prepare

(a) Take the precautions described in the previous WARNING paragraph.

(b) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(c) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(3) Remove (Ref. Fig. 401)

(a) Disconnect and cap electrical connector.

(b) Remove screws (1) and remove control unit.

(4) Preparation of Replacement Component

Not applicable

(5) Install

(a) Position control unit and secure with screws (1).

(b) Connect electrical connector.

(c) Remove safety clip and tag and reset circuit breaker.

(6) Test

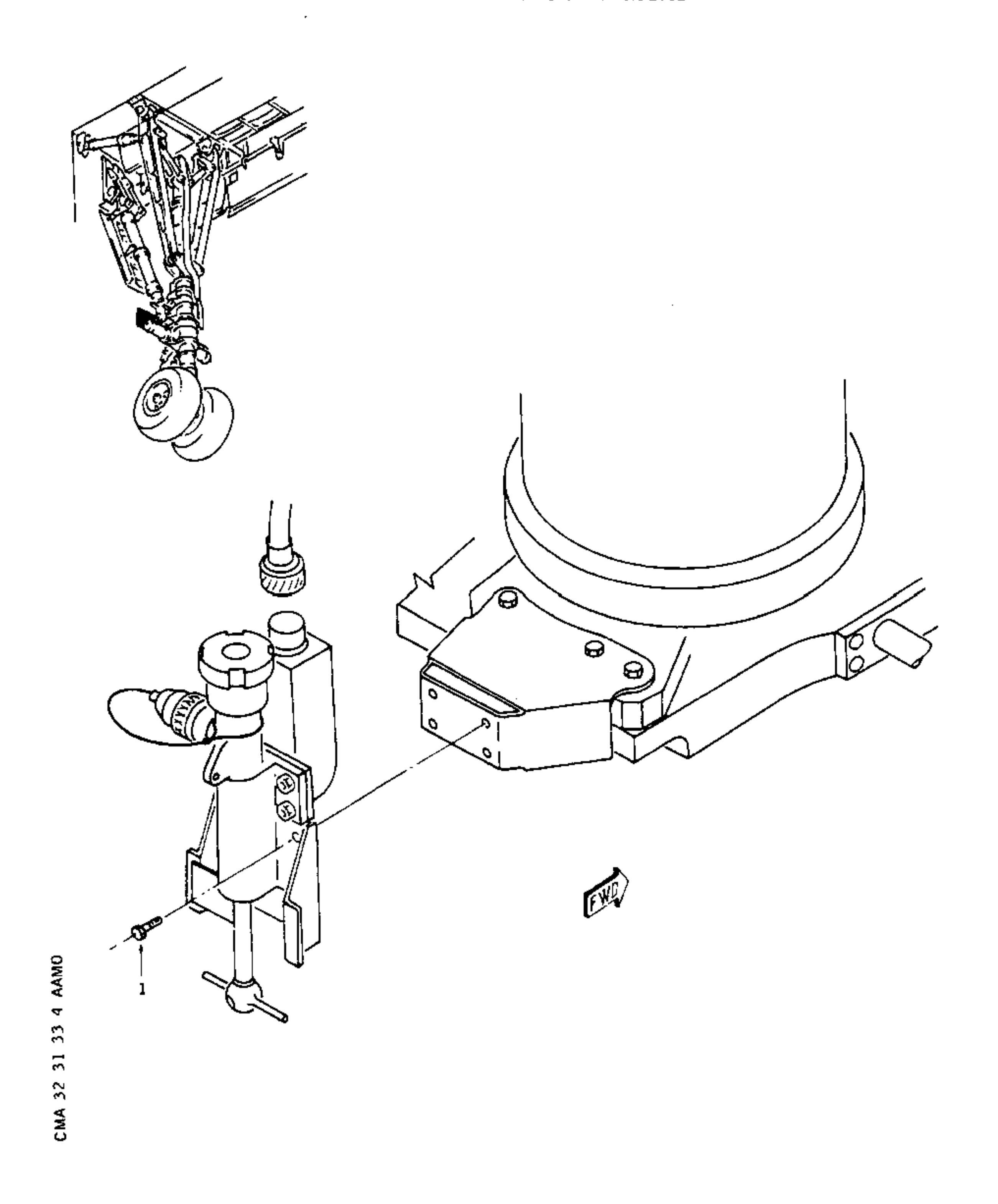
(a) Make certain that handle is locked ; indicator plate showing white.

(b) Make certain that visor is not uplocked.

(c) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(d) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(e) On First Officer's instrument panel, place lan-



Nose Landing Gear Door Ground Opening Control Unit
Figure 401

ding gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT NOSE GEAR DOOR TRAVEL RANGES ARE CLEAR.

(f) Remove locking cap and turn handle to open position ; indicator plate showing red. Nose gear doors open.

(g) Turn handle to close position, indicator plate showing white. Nose gear doors close. Install locking cap.

(h) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(j) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(k) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(7) Close-Up

(a) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

C. Replace Microswitch

(1) Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

(2) Prepare

(a) Take the precautions described in the previous WARNING paragraph.

(b) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(c) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(3) Remove (Ref. Fig. 402)

(a) Disconnect and cap electrical connector.

(b) Remove nuts (10), screws (11) and remove microswitch.

CAUTION : MAKE CERTAIN THAT ACTUATING BALL REMAINS IN POSITION IN CONTROL UNIT.

(4) Preparation of Replacement Component

Not applicable

(5) Install

CAUTION : MAKE CERTAIN THAT ACTUATING BALL IS IN POSITION IN CONTROL UNIT.

(a) Position microswitch and secure using screws (11) and nuts (10).

(b) Connect electrical connector.

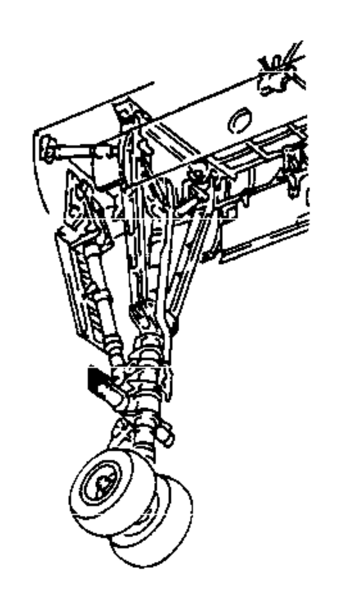
(c) Remove safety clip and tag and reset circuit breaker.

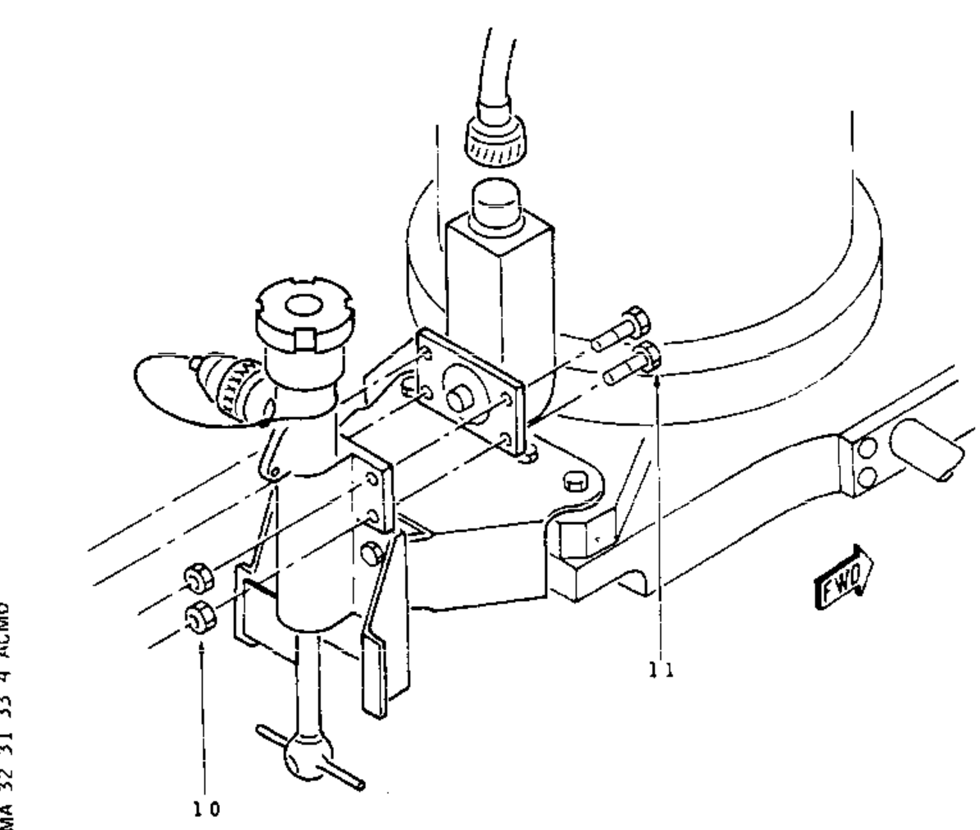
(6) Test

Perform test described in paragraph 1 B.

(7) Close-Up

(a) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.





Microswitch
Figure 402

2. Control Unit - Main Landing Gear Door Ground Opening

A. General

The control unit serves to open the main landing gear doors on the ground.
The control unit is located on the LH main landing gear leg, inboard side.

B. Replace control unit

(1) Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	

(2) Prepare

(a) Take the precautions described in the previous WARNING paragraph.

(b) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(c) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(3) Remove (Ref. Fig. 403)

(a) Disconnect and cap electrical connector.

(b) Cut lockwire, remove screws (22), remove control

unit and retain washers (21) for reinstallation.

(4) Preparation of Replacement Component

Not applicable

(5) Install

(a) Position control unit and secure with washers (21) and screws (22).

NOTE : Screws (22) located forward of control unit also secure hose guide (20).

Torque screws (22) to between 0.16 and 0.22 m.daN (14.2 and 19.5 lbf.in.).
Safety screws (22) in pairs with lockwire (Ref. 20-21-13).

(b) Connect electrical connector.

(c) Remove safety clip and tag and reset circuit breaker.

(6) Test

(a) Make certain that handle is locked ; indicator plate showing white.

(b) Make certain that visor is not uplocked.

(c) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

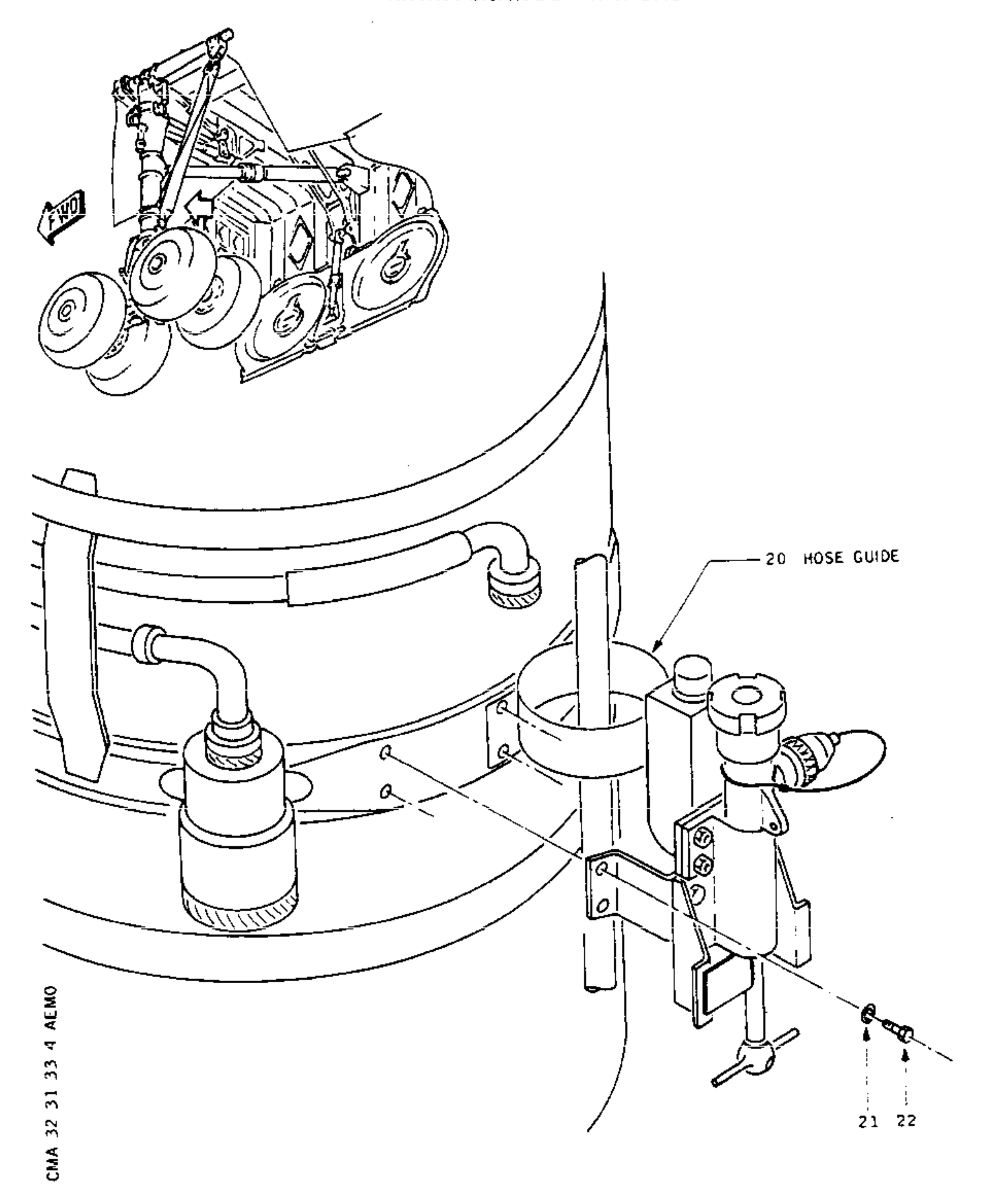
(d) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(e) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(f) Remove locking cap and turn handle to open position ; indicator plate showing red. Doors open.

(g) Turn handle to close position ; indicator plate showing white. Doors close. Install locking cap.

(h) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.



Main Landing Gear Door Ground Opening Control Unit
Figure 403

(j) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(k) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(7) Close-Up

(a) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

C. Replace Microswitch

(1) Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	

(2) Prepare

(a) Take the precautions described in the previous WARNING paragraph.

(b) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(c) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(3) Remove (Ref. Fig. 404)

(a) Remove landing gear door ground opening control unit (Ref. paragraph 2.B).

(b) Remove nuts (30), screws (31) and remove micro-

switch.

CAUTION : MAKE CERTAIN THAT ACTUATING BALL REMAINS IN POSITION IN CONTROL UNIT.

(4) Preparation of Replacement Component

Not applicable

(5) Install

CAUTION : MAKE CERTAIN THAT ACTUATING BALL IS IN POSITION IN CONTROL UNIT.

(a) Position microswitch on its mounting and secure with screws (31) and nuts (30).

(b) Install control unit on main gear leg (Ref. paragraph 2.B).

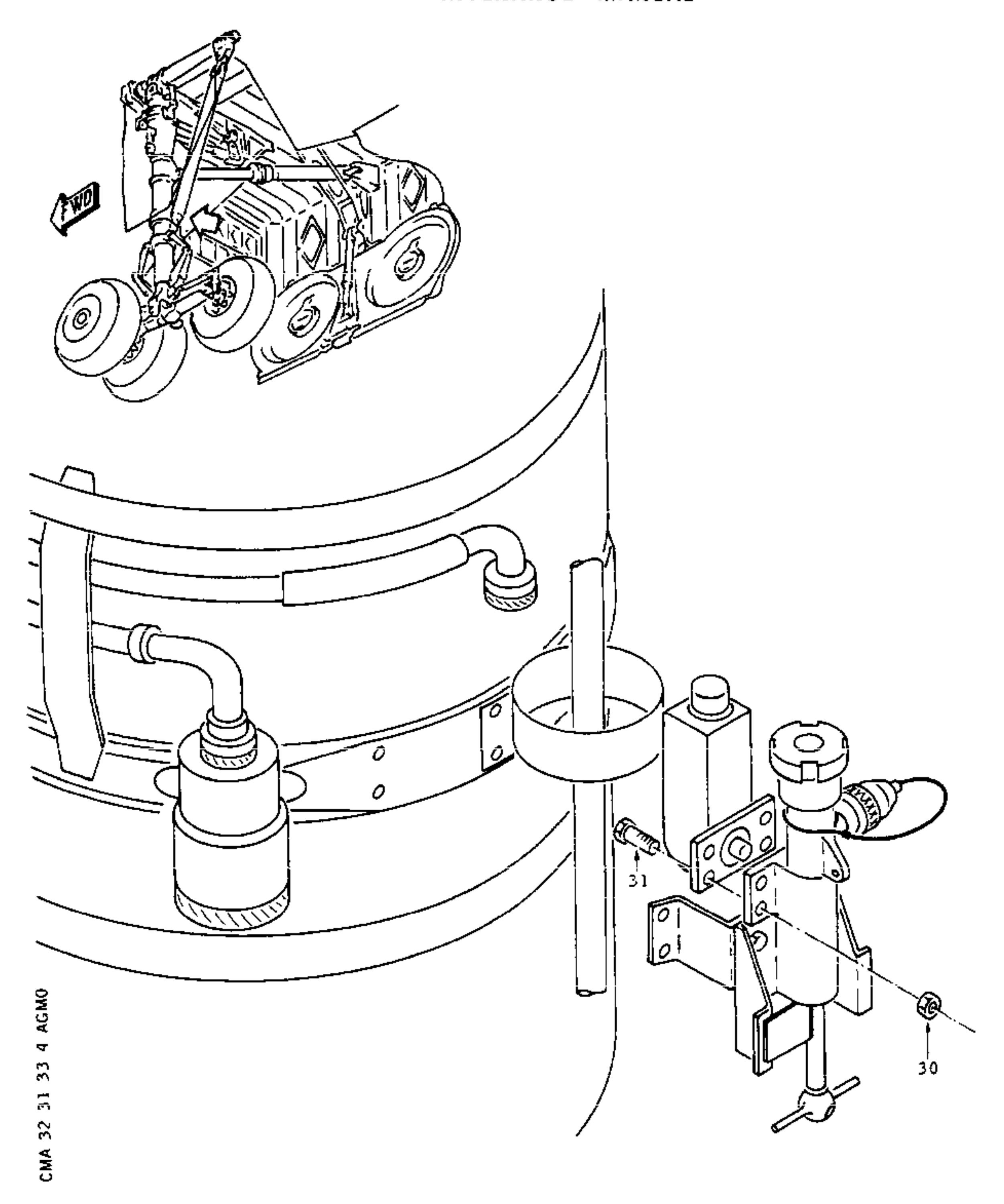
(c) Remove safety clip and tag and reset circuit breaker.

(6) Test

Perform test described in paragraph 2.B.

(7) Close-Up

(a) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.



Microswitch
Figure 404

MAIN GEAR PRESSURE RELIEF VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The pressure relief valve, installed on the main landing gear actuating cylinder retraction side, serves to smooth out pressure peaks at start of landing gear extension under high load factor.
The pressure relief valve is located at the lower part of the actuating cylinder body, sliding rod side.

2. Pressure Relief Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Door Actuating Cylinder	D921317000

**ON A/C ALL

Access Platform 3.50 m (11 ft. 4 in.)	
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
Hydraulic Fluid Container	
Lockwire Dia. 1 mm (0.041 in.) (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network. (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT GEAR DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open gear doors by operating handle located on LH main landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system. (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS CLOSE SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Depressurize Green and Yellow hydraulic systems. (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(12) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(13) Install safety collars on door actuating jacks.

(14) De-energize the aircraft electrical network.

(15) Loosen hydraulic line clamp block nuts.

C. Remove (Ref. Fig. 401)

(1) Mark, disconnect and blank hydraulic lines.

(2) Cut lockwire and remove screws (4), retain washers (3) for reinstallation.

(3) Remove pressure relief valve and remove spool (1).

D. Preparation of Replacement Component

(1) On removed pressure relief valve cut lockwire, remove unions (2) and discard seals.

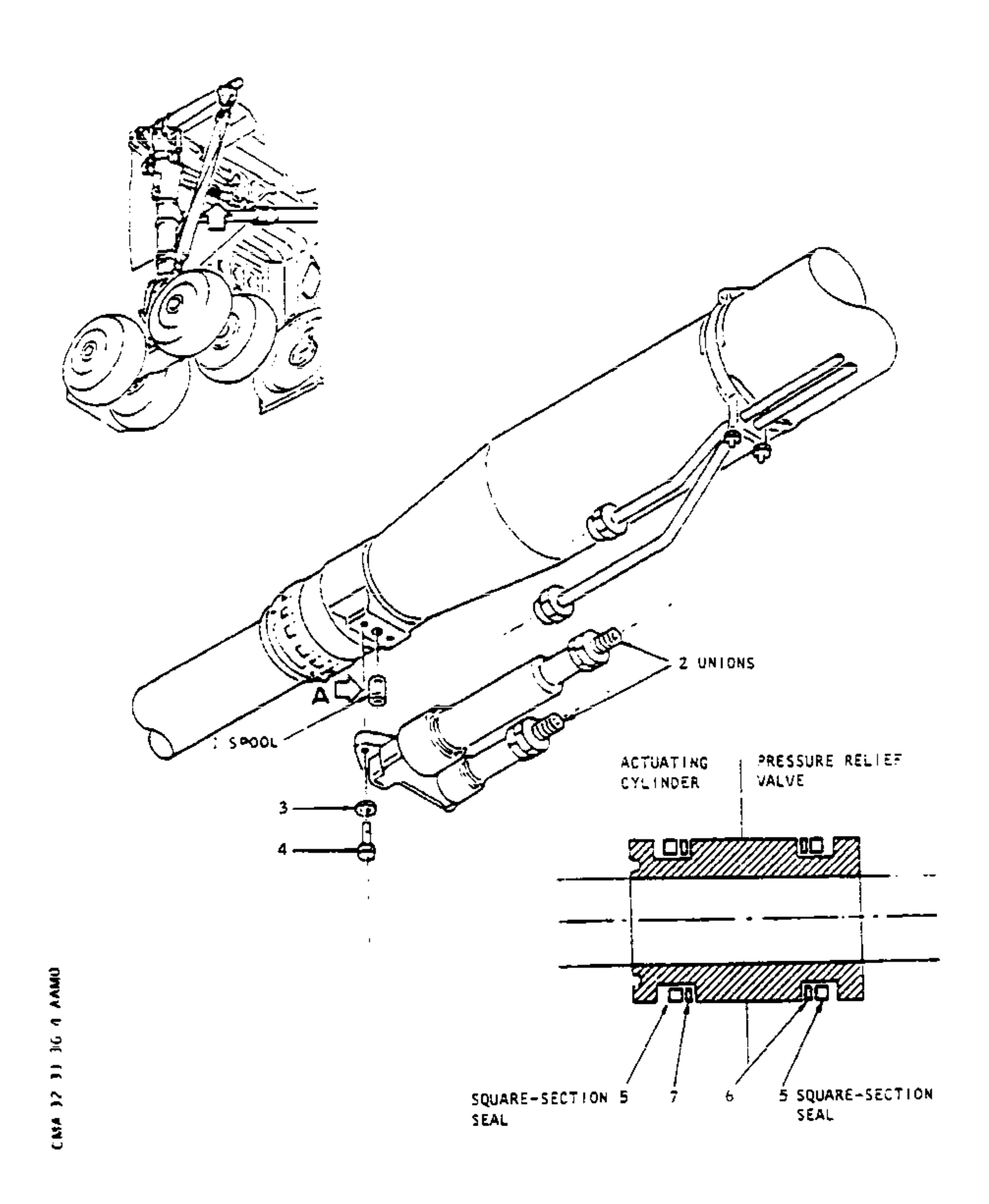
(2) On replacement pressure relief valve, install unions (2) with new seals. Safety with lockwire. (Ref. 20-21-13).

R (3) Check that back-up rings (6), (7), and square section
R seals (5) are in position on replacement spool.

E. Install

(1) Install spool (1) with circular groove facing actuating cylinder.

(2) Install pressure relief valve with screws (4) and washers (3).



Pressure Relief Valve
Figure 401

R

Safety screws 4 with lockwire (Ref. 20-21-13).

(3) Remove blanking plugs and connect hydraulic lines according to marking made during removal.

(4) Tighten hydraulic line clamp block nuts.

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(6) Remove safety clips and tags and reset circuit breakers.

(7) Remove safety collars from door actuating jacks.

(8) Energize the aircraft electrical network. (Ref. 24-41-00, Servicing).

(9) Pressurize Green and Yellow hydraulic tanks. (Ref. 29-13-00, Servicing).

(10) Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

(11) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(12) Close gear doors by operating handle located on LH main landing gear leg.
Install locking cap.

(13) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(14) Shut down and depressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

F. Tests

(1) Carry out a landing gear Normal retraction and extension (Ref. 32-31-00, Adjustment/Test).

(2) Carry out a landing gear Emergency extension. (Ref. 32-32-00, Adjustment/Test).

(3) During these operations check replacement component for external leakage.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Replenish hydraulic tanks as required (Ref. 12-12-29).

(3) Close access doors.

NOSE GEAR DOOR ELECTRO-HYDRAULIC SELECTOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nose gear door selector is mounted on a base plate located in zone 127.
The sealing between the nose gear door selector and the base plate is achieved by spools.

2. Nose Gear Door Selector

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.220 m (10 ft.7 in.)	
Hydraulic Fluid Container	
Blanking Plugs	
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
Lockwire (0.028in) (0.7 mm) (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position

(7) Remove locking cap and open landing gear doors by operating handle located on the nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT	15-215	G 2	A 7
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	15-215	G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M626	F22

(11) Display a warning notice in the flight compartment prohibiting operation of landing gear controls.

WARNING: DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks. (Ref. 29-13-00, Servicing).

(14) Install safety collars on door actuating jacks.

C. Remove

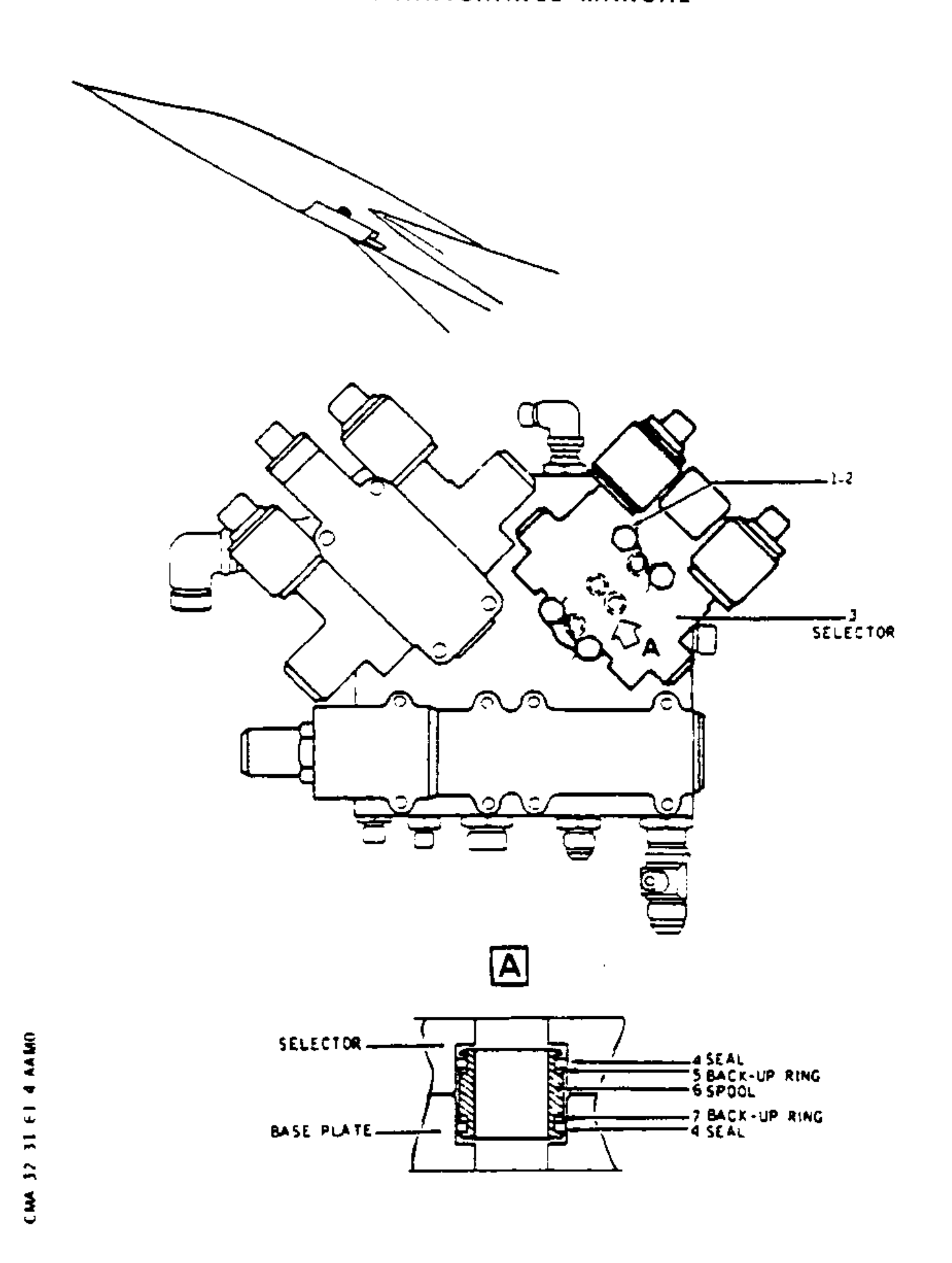
(1) Disconnect and cap electrical connector.

(2) Cut and remove lockwire, remove screws (1) which attach the selector (3) on its base plate, retain washers (2) for reinstallation.

(3) Remove selector. Remove and discard spools (6).
R Make certain that seals (4) and back-up rings (5) and (7) are removed with spools (6).

(4) Blank base plate connecting ports.

D. Preparation of Replacement Component



Nose Gear Electro-Hydraulic Selector
Figure 401

R

NOTE: The replacement selector is fitted with Product No.011 (Ref. 20-30-00).

Make certain that replacement spools are correctly fitted
R with their back-up rings (5) and (7), and square-section
R seals (4).

E. Install

(1) Remove blanking plugs from base plate ports.

(2) Install spools in their bores.

CAUTION: THE END OF THE SPOOL BEARING THE MARKING MUST BE INSTALLED FACING THE BASE PLATE.

(3) Remove blanking caps from replacement selector, position and install selector.

(4) Secure selector with screws (1) fitted with washers (2). Torque screws (1) to between 30 and 35 lbf. in. (0.339 and 0.395 m.daN).

(5) Wirelock screws (1) (Ref. 20-21-13).

(6) Remove cap and connect electrical connector.

(7) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(8) Remove hydraulic fluid container.

(9) Remove safety sleeves.

(10) Remove access platform.

(11) Remove safety clips and tags and reset circuit breakers.

(12) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

F. Test

(1) Carry out several landing gear door opening and closing tests (Ref. 32-31-00, Adjustment/Test).

(2) Carefully check the replacement equipment sealing at first pressurization and on completion of tests.

G. Close-Up

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On First Officer's instrument panel,place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

(3) Close landing gear doors by operating handle located on the nose landing gear leg. Install locking cap.

(4) On First Officer's instrument panel, place the landing gear Normal control lever in NEUTRAL position.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) De-energize the aircraft electrical network and dis= connect electrical ground power unit.

(7) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(8) Close access doors.

(9) Remove warning notice from the flight compartment.

NOSE GEAR DOOR UPLOCK - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Each door is held in closed position by two uplocks. Uplocking is mechanical, uplock release is hydraulic. Each uplock is equiped with a microswitch.

2. Uplock Assy - Nose Gear Door

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Safety Sleeve - Nose Landing Gear Doors	E925002000
Hydraulic Fluid Container	-
Blanking Plugs/Caps	-
Circuit Breaker Safety Clips	-
Lockwire - Dia. 0.60 mm (0.024 in) Corrosion Resistant Steel	-

DESCRIPTION	PART NO.
Access Platform 3.220 m (10 ft 7 in)	-
Special Materials (Ref 20-30-00, No.119)	-
R PR 1720 SM (Ref. 20-30-00, No.351)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open landing gear doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP. REF
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in the flight compartment prohibiting use of landing gear Normal control lever and landing gear and door Emergency control lever.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

R (14) Install safety sleeves on gear door actuating jacks.

R

C. Remove (Ref. Fig. 401)

(1) Disconnect electrical connector from microswitch and cap connector.

(2) On unlocking actuator (5) disconnect hydraulic lines. Blank-off cylinder ports and cap open line ends.

(3) Disconnect rod (33) from control lever (2). Remove cotter pin and remove nut (4), washer (3) and bolt (1).

(4) At the upper attachment remove cotter pin and nut (29). Remove bolt (11). Retain special washer (28), spacer (27) and washer (10) for reinstallation.

(5) At the lower attachment remove cotter pin, nut (17), washer (16) and bolt (14). Retain shims (13) for reinstallation.

(6) Remove uplock (12).

R D. Removal of Transferable Items (Ref. Fig. 401)

(1) From removed component.

R

(a) Cut and remove lockwire, remove screws (21) and washers (20). Remove microswitch (19).

R NOTE: After removing microswitch, ensure that
R all shims of the shim pack are retained
R with the uplock.

(b) Disconnect rod (33) and lever (31) from the uplock mechanical control shaft by removing cotter pin, nut (25), washer (26) and bolt (32). Retain spacer (24) for reinstallation.

(c) Remove unlocking actuator (5) by removing cotter pins, nuts (9), washers (8) and bolts (30). Discard seal (6).

NOTE: Bushes (7) must remain in position on uplock body.

(2) On replacement component:

(a) Install a new seal (6) on unlocking actuator.

NOTE: Make certain that bushes (7) are in position on uplock body.

(b) Position and install unlocking actuator (5) on replacement uplock with bolts (30), washers (8) and nuts (9).
Torque nuts (9) to between 50 and 60 lbf in (0.565 and 0.678 mdaN) and safety with cotter pins.

(c) Connect rod (33) and lever (31) to control shaft of the replacement uplock with spacer (24), bolt (32), washer (26) and nut (25).
Torque nut (25) to between 85 and 95 lbf in (0.960 and 1.073 mdaN).

R

(d) Lock uplock hook in closed position.

R (e) Before installing microswitch, prepare as
R follows:

R - Make sure the new uplock has a shim-pack
R installed.

R NOTE: If shim pack is not installed return the
R uplock to the servicing bay for fitment
R of shim pack.

R - Check Dimension Y (Ref. Fig. 401) before installing the uplock. The clearance must be between 0.170 and 0.186 in (4.32 and 4.72 mm). If necessary, add or remove shims (18) to obtain the correct clearance. The shims are held in place with product No.351.
R - Apply product No.119 to the annular volume around plunger.
R - Install grease retaining membrane.

R (f) Install microswitch (19) with washers (20) and screws (21). Torque screws (21) to between 25 and 30 lbf in (0.282 and 0.339 mdaN) and safety, in pairs, with lockwire (Ref. 20-21-13).

R (g) Mechanically unlock hook and place in open position.

E. Install

(1) At the lower attach point:

(a) Install shims (13) on each side of uplock.

(b) Install uplock equipped with shims (13) into fork end.

(c) Install bolt (14) head facing forward.

(d) At either side of fork fitting check that clearance between shims and fork fitting sides is 0.003 in (0.08 mm).

(e) Install washer (16). Install nut (17) and safety with cotter pin.

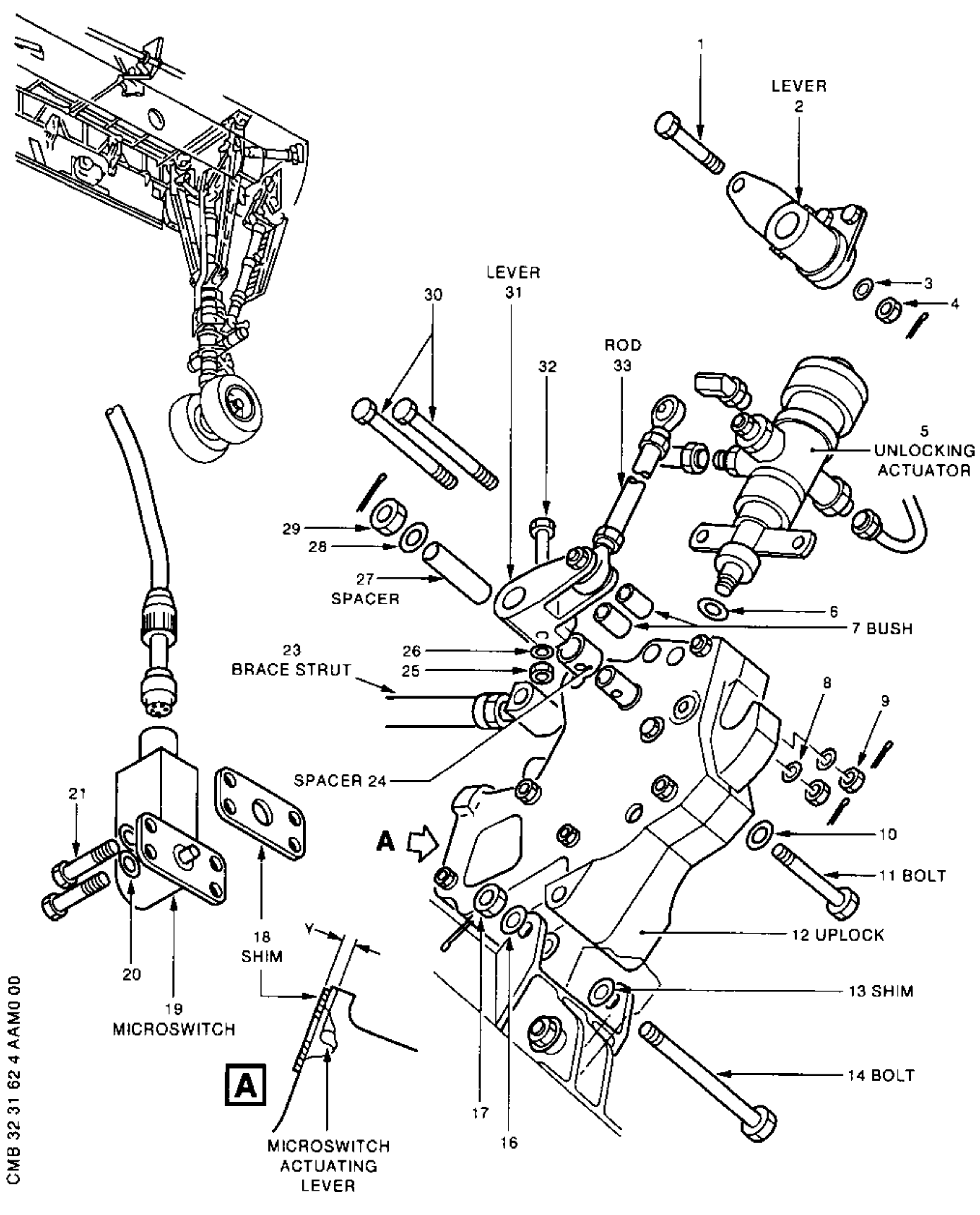
(2) At the upper attach point:

(a) Engage brace strut (23) end fitting in uplock upper fork.

(b) Insert spacer (27) in fork fitting and brace strut (23) end fitting bores.

(c) Install bolt (11) fitted with washer (10) in spacer bore, head facing forward.

(d) Install special washer (28) and nut (29). Safety nut with cotter pin.



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R

Nose Gear Door Uplock Assy
Figure 401

(3) Position rod (33) spherical eye end fitting in control lever (2) fork end. Install bolt (1), washer (3) and nut (4).
Torque nut (4) to between 40 and 50 lbf in (0.452 and 0.565 mdaN) and safety with cotter pin.

(4) Remove blanking caps from hydraulic lines and uplock. Connect hydraulic lines.

(5) Remove cap from electrical connector and connect to microswitch.

(6) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(7) Remove hydraulic fluid container.

R (8) Remove safety sleeves.

(9) Remove access platform.

(10) Remove safety clips and tags and reset the circuit breakers tripped in para. B.

(11) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

F. Tests

(1) Adjust uplock (Ref. Adjustment/Test).

G. Close-Up

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(3) Close landing gear doors by operating handle located on nose landing gear leg.
Install locking cap.

(4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Replenish Green and Yellow hydraulic tanks as necessary (Ref. 12-12-29).

(7) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(8) Close access doors.

(9) Remove warning notice from flight compartment.

3. Replace Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Safety Sleeve - Nose Landing Gear Doors	E925002000
Circuit Breaker Safety Clips	-
Access Platform 3.220 m (10 ft 7 in)	-
Lockwire - Dia. 0.60 mm (0.024 in) Corrosion Resistant Steel	-
Special Materials (Ref 20-30-00, No.119)	-
PR 1720 SM (Ref. 20-30-00, No.351)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by means of operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

R (11) Install safety sleeves on gear door actuating jacks.

R

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

(2) Cut and remove lockwire, remove screws (21) and washers (20).

(3) Remove microswitch (19).

R NOTE: After removing microswitch, ensure that all
R shims of the shim pack are retained with the
R uplock.

D. Preparation of Replacement Component

(1) Before installing microswitch, prepare as follows:

R (a) Make sure the uplock has a shim-pack fitted.

R NOTE: If shim pack is not installed the uplock
R must be returned to the servicing bay for
R servicing.

R (b) Check Dimension Y (Ref. Fig. 401) before
R installing the microswitch. The clearance must
R be between 0.170 and 0.186 in (4.32 and 4.72 mm).
R If necessary, add or remove shims (18) to obtain
R the correct clearance.
R The shims are held in place with product No.351.

R (c) Apply product No.119 to the annular volume around plunger.

R (d) Install grease retaining membrane.

E. Install

(1) Install microswitch (19).

R NOTE: Make sure a shim pack is fitted to the uplock
R (Ref. Fig. 401).

R (2) Apply product No.119 to the annular volume around
R plunger.

R (3) Install grease retaining membrane.

R (4) Install washers (20) and screws (21).
Torque screws (21) to between 25 and 30 lbf in (0.282 and 0.339 mdaN) and safety in pairs with lockwire (Ref. 20-21-13).

F. Test

(1) Remove safety clips and tags and reset circuit breakers.

(2) Manually lock hooks of the three door uplocks whose microswitches have not been replaced.

(3) On First Officer's instrument panel, check on gears position indicating unit that red light corresponding to green NOSE arrow is illuminated.

(4) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(5) On centre console, place landing gear and door Emergency control lever in DOORS position.

(6) Make certain that the three uplock hooks are not locked and open them manually.

(7) On First Officer's instrument panel, on gears position indicating unit, check that UPPER LOCKS light extinguishes.

(8) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

G. Close-Up

(1) Remove access platform.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

R (3) Remove safety sleeves from gear door actuating jacks.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(6) Close gear doors by means of operating handle located on nose landing gear leg.
Install locking cap.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref 24-41-00, Servicing).

(10) Close access doors.

NOSE GEAR DOOR UPLOCK - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Nose gear door forward and rear uplock assy adjustment

2. Forward Uplock Assy - Nose Gear Door

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Access Platform 3.220 m (10 ft. 7 in.)	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Lockwire - Dia. 0.7 mm (0.028 in.) (Corrosion Resistant Steel)	
Sealant (Ref. 20-30-00, No.351)	

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Connect hydraulic ground power unit to Green hydraulic system.

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(8) Remove locking cap and open landing gear doors by operating handle located on the nose landing gear leg.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Trip, safety and tag the following circuit breakers

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT	G	4	A 9

(12) Display a warning notice in the flight compartment prohibiting operation of landing gear Normal control lever and landing gear and door Emergency control lever.

(13) Install safety sleeves on door actuating jacks.

C. Adjust

(1) Uncouple actuating jack (11) corresponding to main door whose forward uplock (10) is to be adjusted.

(2) Manually close gear door and check that forward up-lock (10) and rear uplock (12) are closed and locked.

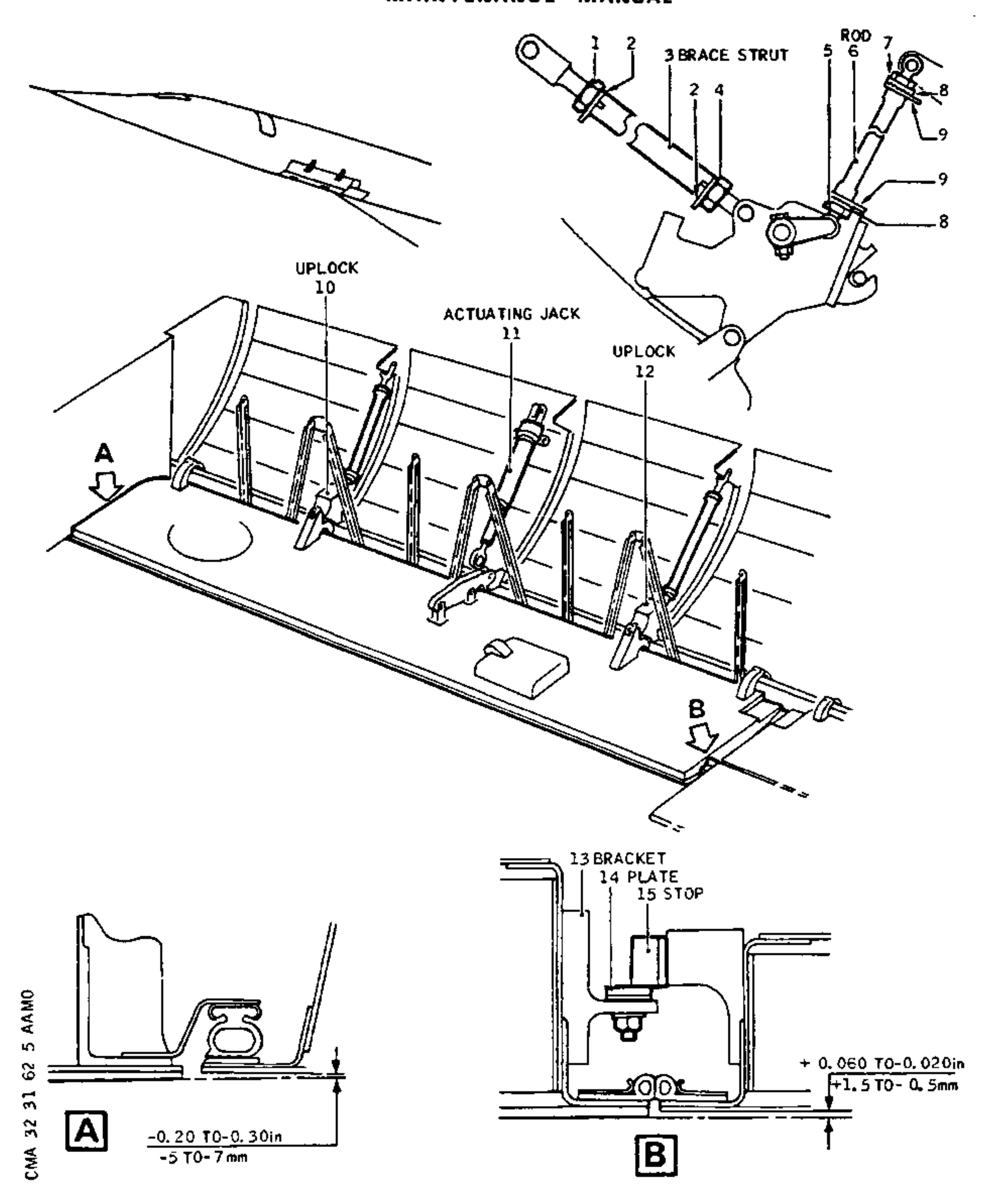
(3) At the level of frame 18, check displacement of gear door with respect to fuselage skin.

NOTE : Gear main door out-of-wind limits at frame 18 must be betweeen - 0.20 in. and - 0.30 in. (-5 mm and -7.5 mm).

(4) If necessary, cut and remove lockwire, loosen nuts (1) and (4), disengage lock washers (2) and screw or uns-crew brace strut (3). After adjustment engage lock wa-shers (2), fully tighten nuts (1) and (4) safety with lockwire (Ref. 20-21-13).
Coat nuts (1), (4) lock washers (2) and brace strut (3) end fittings with product No.351.

(5) Open access door 221RF located in passenger compartment Remove locking pin from Ultimate Emergency extension control handwheel. Turn handwheel fully counter-clockwise.
Check that the index on uplock and the index on mecha-nical unlocking pin are still aligned.

(6) If necessary, cut and remove lockwire, loosen nuts (5) and (7), disengage lock washers (8) and (9) and adjust Ultimate Emergency control rod (6). After adjustment engage lock washers (8) and (9) fully tighten nuts (5) and (7) and safety with lockwire (Ref. 20-21-13).



R

Nose Gear Door Uplock
Figure 501

CAUTION : DOORS MUST BE MANUALLY RESTRAINED DURING FINAL OPENING PHASE TO PREVENT DAMAGE TO DOORS AND ADJACENT STRUCTURE.

(7) Unlock gear doors in Ultimate Emergency (2.5 to 3 wheel turns). Check that the uplocks unlock simultaneously.

(8) Return the Ultimate Emergency control to initial position. Install locking pin. Close door 221RF.

(9) Connect actuating jack of main door concerned.

(10) Remove safety sleeves from gear door actuating jacks.

(11) Remove safety clips and tags, and reset circuit breakers.

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(14) Close nose landing gear doors by operating handle located on nose landing gear leg.
Install locking cap.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Tests

(1) Carry out an Emergency gear doors opening sequence with aircraft on its wheels (Ref. 32-32-00 paragraph 3. Adjustment/Test).

(2) Carry out several Normal gear door opening and closing sequences. (Ref. 32-31-00, Adjustment/Test).

(3) The replacement component shall be checked for leakage at initial pressurization and upon completion of tests.

E. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove access platform.

(4) Remove warning notice.

3. Nose Gear Door Rear Uplock

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Safety Stay	-
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	-
Access Platform 3.220 m (10 ft 7 in)	-
Lockwire - Dia. 0.7 mm (0.028 in) (Corrosion Resistant Steel)	-
Sealant (Ref. 20-30-00, Product No.351)	-
Safety Barriers	-
Safety Sleeve - Nose Landing Gear Doors	E925002000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up the aircraft (Ref. 07-11-00).

(4) Install safety stay.

(5) Position safety barriers.

(6) Make certain that visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(8) Connect hydraulic ground power unit to Green hydraulic system.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(11) Remove locking cap and open landing gear doors by operating handle located on nose landing gear leg.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(14) Display a warning notice in the flight compartment prohibiting operation of landing gear Normal control lever and landing gear and door Emergency control lever.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Install safety sleeves on nose landing gear door actuating jacks.

R

R (17) Remove landing gear and shortening mechanism safety devices.

C. Adjust (Ref. Fig. 501)

(1) Remove safety clips and tags and reset circuit breakers.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in UP position. Adjust hydraulic ground power unit delivery to obtain a slow gear retraction.

(4) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Disconnect actuating jack (11) and main door corresponding to rear uplock (12) to be adjusted.

(7) Manually close gear door and check that forward uplock (10) and rear uplock (12) are closed and locked.

(8) On strut (3) cut and remove lockwire, loosen nuts (1) and (4) and disengage lock washers (2). Unscrew strut until gap is observed between plate (14) of gear main door bracket (13) and door stop (15) located under

strut. Close this gap by turning brace strut. After adjustment, engage lock washers (2), tighten nuts (1) and (4) and safety with lockwire (Ref. 20-21-13).
Coat nuts (1) (4), lock washers (2) and strut (3) end fittings with product No.351.

(9) Check main door displacement with respect to secondary door and drag strut door.

NOTE : Main door into wind/out-of-wind limits with respect to secondary door and drag strut door must be between :
+ 0.060 in. and - 0.020 in. (+ 1.5 mm to - 0.5 mm).

(10) Open access door 221RF located in flight compartment Remove locking pin from Ultimate Emergency extension control handwheel. Turn handwheel fully counter-clockwise.
Check that the index on uplock and the index on mechanical unlocking pin are aligned.

(11) If necessary, cut and remove lockwire, loosen nuts (5) and (7), disengage lock washers (8) and (9) and adjust Ultimate Emergency control rod (6). After adjustment engage lock washers (8) and (9), fully tighten nuts (5) and (7) and safety with lockwire (Ref. 20-21-13).

CAUTION : DOORS MUST BE MANUALLY RESTRAINED DURING FINAL OPENING PHASE TO PREVENT DAMAGE TO DOORS AND ADJACENT STRUCTURE.

(12) Unlock gear doors in Ultimate Emergency (2.5 to 3 wheel turns). Check that the uplocks unlock simultaneously.

(13) Return the Ultimate Emergency control to initial position. Install locking pin. Close door 221RF.

(14) Connect actuating jack of main door concerned.

(15) Not applicable.

(16) Remove safety sleeves from gear door actuating jacks.

(17) Remove safety clips and tags and reset circuit breakers.

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RAN-

GES ARE CLEAR.

(19) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(20) With gears downlocked, shut down and depressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(21) On First Officer's instrument panel, on gears position indicating unit, make certain that the four green arrows are illuminated (Gears downlocked).

(22) Install landing gear and shortening mechanism safety devices.

(23) Pressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(24) Close landing gear doors by means of operating handle located on nose landing gear leg. Install locking cap.

(25) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(26) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Tests

(1) Carry out an Emergency gear door opening sequence with aircraft on the ground (Ref. 32-32-00, Adjustment/Test paragraph 3).

(2) Carry out several Normal gear door opening and closing sequences. (Ref. 32-31-00, Adjustment/Test).

(3) The replacement component shall be checked for leakage at initial pressurization and upon completion of tests.

E. Close-Up

(1) Disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove safety barriers and check that the area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

(6) Remove warning notice.

NOSE GEAR DOOR JACK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKEDS, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOSCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Each nose gear door is fitted with a hydraulic actuating jack attached at one end to the aircraft structure and at the other to a fork fitting at the door central hinge. The upper part of each actuating jack incorporates a shuttle valve which enables the extension manoeuvre to be carried out in Normal or Emergency mode.

2. Nose Gear Door Jack

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit-Hydraulic-Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.220 m (10 ft. 7 in.)	

DESCRIPTION	PART NO.
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	
Clinometer	
Hydraulic Fluid Container	
Lockwire Dia. 0.028 in. (0.7 mm) - Corrosion Resistant Steel	
Common Grease (Ref. 20-30-00, No.051)	
Special Materials (Ref. 20-30-00, No.147)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit, and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing)

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER		MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G	1	A 6
UC SELECTOR RAISE CONT		G	2	A 7
UC LOWER DOORS OPEN SUP		G	3	A 8
UC SELECTOR LOWER CONT		G	4	A 9

(11) Display a warning notice in flight compartment.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety collars on gear door actuating jacks.

C. Remove

(1) Disconnect hydraulic lines from jack.

(2) Cap open line ends, and jack ports.

(3) Disconnect lower part of jack from door :

(a) Remove cotter pin, nut (9) washer (8) bolt (6). The spacer must remain on the door hinge fork fitting.

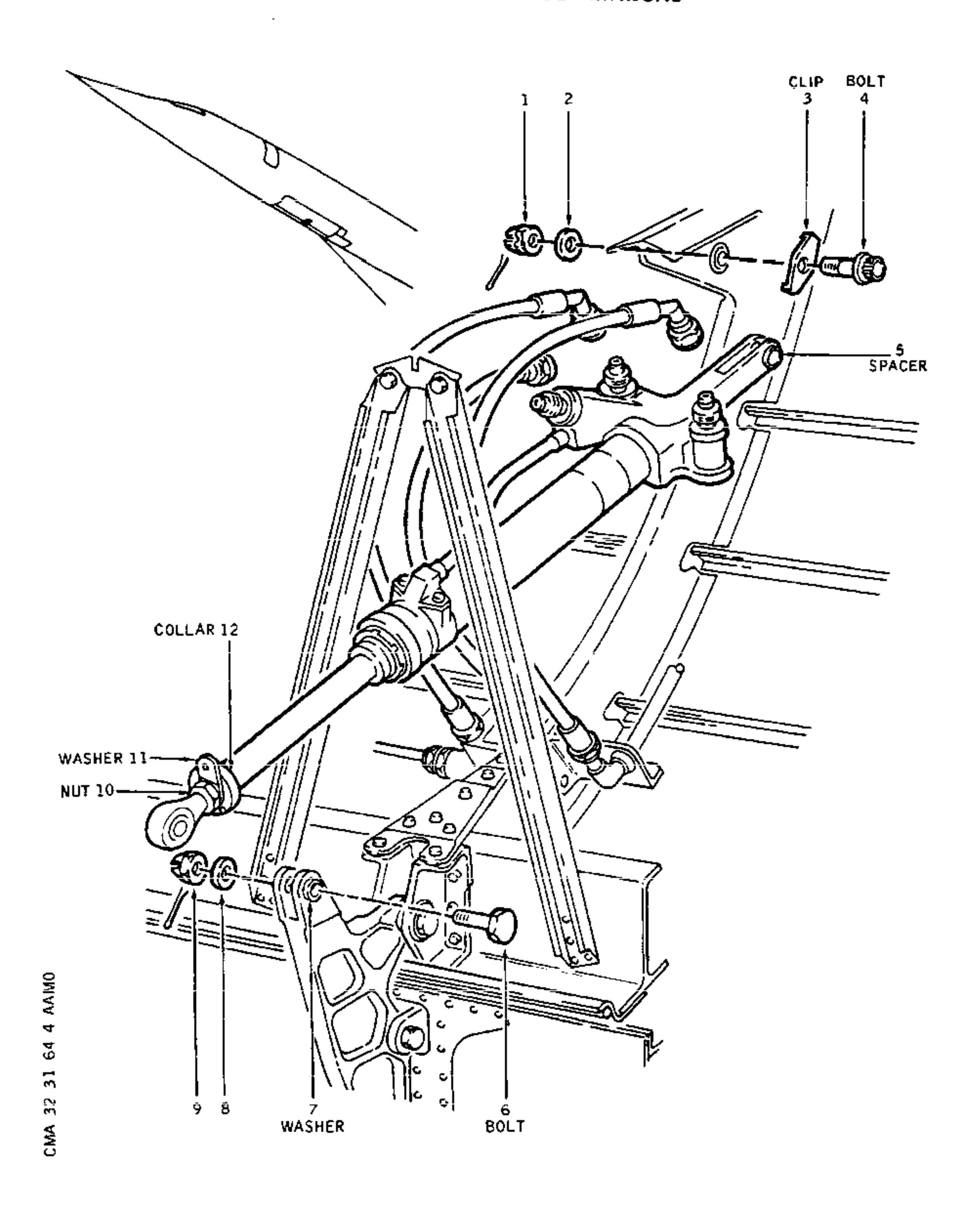
(4) Disconnect upper part of jack from aircraft structure.

(a) Remove cotter pin, nut (1), washer (7), bolt (4) clips (3). The spacer must remain on the door hinge fork fitting.

(b) Remove the jack.

D. Preparation of Replacement Component

NOTE : The replacement jack is filled with Product No.011 (Ref. 20-30-00).



Nose Gear Door Jack
Figure 401

(1) Loosen nut (10). Free washer (11) and collar (12).

(2) Remove spherical end-fitting from replacement actuating jack.

(3) Smear spherical end-fitting thread with product No.147 (Ref. 20-22-25).

(4) Install spherical end-fitting on jack rod with nut (10) washer (11) and collar (12). Do not tighten nut (10) at this stage.

E. Install

(1) Attach replacement jack upper fork to aircraft structure.

(a) Check that spacer (5) is in position on jack fork end-fitting.

(b) Install clip (3) on spacer side of fork end-fitting.

(c) Lubricate pin (4) (Product No.051).

(d) Install pin (4) with head on clip side of fork end-fitting.

(e) Install washer (2) and nut (1).

(2) Using hydraulic ground power unit, deliver pressure to actuating jack (sliding rod end) so as to maintain actuating jack in fully retracted position (sliding rod against internal mechanical stop).

(3) Manually close door. Make certain that uplock hooks are correctly locked.

(4) Turn jack spherical end-fitting so that bolt (6) can be simultaneously inserted through door hinge fork-fitting and jack spherical end-fitting.

(5) Remove bolt (6). Disconnect jack and screw up spherical end-fitting by two turns.

(6) Using a clinometer, positioned on the inner surface of door in same axis as actuating jack, record the angle of door in door uplocked position.

(7) In passenger compartment open access door 221RF.

WARNING : SUPPORT DOOR DURING UNLOCKING OF UPLOCKS TO PREVENT DOOR STRIKING AIRCRAFT STRUCTURE.

(8) Remove locking pin and turn Ultimate Emergency control wheel clockwise until door uplocks unlock. Manually open door.

(9) Return control wheel to initial position ;
- Turn control wheel anti-clockwise until it comes against its mechanical stop then clock-wise approximately 90°. Install locking pin.

(10) Close access door 221RF.

(11) Using hydraulic ground power unit deliver pressure to actuating jack so as to maintain jack in fully extended position.

(12) Connect replacement jack spherical end-fitting to fork end-fitting on door :

(a) Check that spacer (7) is installed in door fork fitting.

(b) Lubricate bolt (6) (Product No.051).

(c) Install pin (6) with head facing spacer (7).

(d) Position collar (12) and washer (11). Tighten nut (10). Torque to between 550 and 600 lbf.in. (6.214 and 6.779 m.daN).

(e) Safety nut (10) with lockwire (Ref. 20-21-13).

(13) Using a clinometer, record the angle of door in door open position.

(14) The difference between the angles of the door in open and closed positions shall be 67° minimum.

(15) Remove nose gear door limit switch actuator cover.

(16) Check the clearance between each limit switch and its stop. This clearance must be equal to 0.05 in. (1.2 mm). If necessary adjust the limit switch actuator (Ref. 32-31-95, Adjustment/Test).

(17) Install limit switch actuator cover.

(18) Install washer (8) and nut (9).

(19) Tighten nuts (1) and (9) and safety with cotter pin.

(20) Disconnect hydraulic ground power unit hydraulic lines at actuating jack, remove blanking caps, connect hydraulic lines.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE.
IF REQUIRED FOR REINSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(21) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(22) Remove container.

(23) Remove safety collars.

(24) Make certain that access platform is removed.

(25) Remove safety clips and tags and reset the circuit breakers.

(26) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(27) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(28) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position. The internal mechanism of the uplocks is restored to operating condition.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(29) Close doors by operating handle located on nose gear leg. Install locking cap.

(30) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(31) Shut down hydraulic power, and depressurize Green hydraulic system.

F. Test

(1) Carry out a nose gear door opening and closing sequence by operating handle located on nose gear leg.

(2) Carry out an Emergency door opening sequence with aircraft on its wheels (Ref. 32-32-00 para. 3, Adjustment/Test).

(3) The new equipment must be thoroughly checked for leakage at the time of initial pressurization, and upon completion of tests.

RB (4) If problems with the nose door uplock are suspect
RB the following additional tests should be carried out.

RB WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE
RB CLEAR BEFORE PRESSURIZING GREEN HYDRAULICS.

RB (a) Open nose gear doors by operating handle located
RB on nose gear leg.

RB (b) Depressurize Green hydraulic system (Ref.
RB 29-11-00, Servicing).

RB (c) Install safety collar on right gear door
RB actuating jack.

RB (d) Pressurize Green hydraulic system (Ref. 29-11-00,
RB Servicing.

RB (e) Close left gear door by operating handle located
RB on nose gear leg.

RB (f) Depressurize Green hydraulic system (Ref.
RB 29-11-00, Servicing).

RB (g) Remove safety collar from right gear door
RB actuating jack.

RB (h) Pressurize Green hydraulic system (Ref. 29-11-00,
RB Servicing). The right door will close with the
RB pressure without need for selection.

RB (i) Check for satisfactory door 'up lock' indication.

RB (j) Open nose gear doors by operating handle located
RB on nose gear leg.

RB (k) Depressurize Green hydraulic system (Ref.
RB 29-11-00, Servicing).

RB (l) Install safety collar on left gear door actuating jack.

RB (m) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

RB (n) Close right gear door by operating handle located on nose gear leg.

RB (o) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

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RB (p) Remove safety collar from left gear door actuating jack.

RB (q) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing). The left door will close with the pressure without need for selection.

RB (r) Check for satisfactory 'up lock' indication.

R (s) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks, as required (Ref. 12-12-29).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

R (3) Disconnect and remove hydraulic ground power unit (Ref. 29-11-00, Servicing).

(4) Close access doors.

(5) Remove warning notice from flight compartment.

NOSE GEAR ELECTRO-HYDRAULIC SELECTOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nose gear selector is mounted on a base plate located in zone 127.
Sealing between the selector and the base plate is achieved through spools fitted with seals.

2. Nose Gear Electro-Hydraulic Selector

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform - 3.220 m (10 ft. 7 in.)	
Hydraulic Fluid Container	
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
Lockwire Dia 0.028 in. (0.7 mm) Corrosion Resistant Steel	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open landing gear doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

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(11) Display a warning notice in the flight compartment.

(12) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety collars.

C. Remove

(1) Disconnect and cap electrical connector.

(2) Cut and remove lockwire, remove screws (1) which attach selector (3) to its base plate.
Retain washers (2).

(3) Remove selector. Discard spools (6).

(4) Blank connecting ports.

D. Preparation of Replacement Component

NOTE : The replacement selector is filled with Product No.011 (Ref. 20-30-00).

(1) Check that back-up rings (5) (7), O-ring seal (8) and square section seal (4) are correctly fitted to the replacement spools.
The O-ring seal is fitted to the end of the spool marked with a circular groove.

E. Install

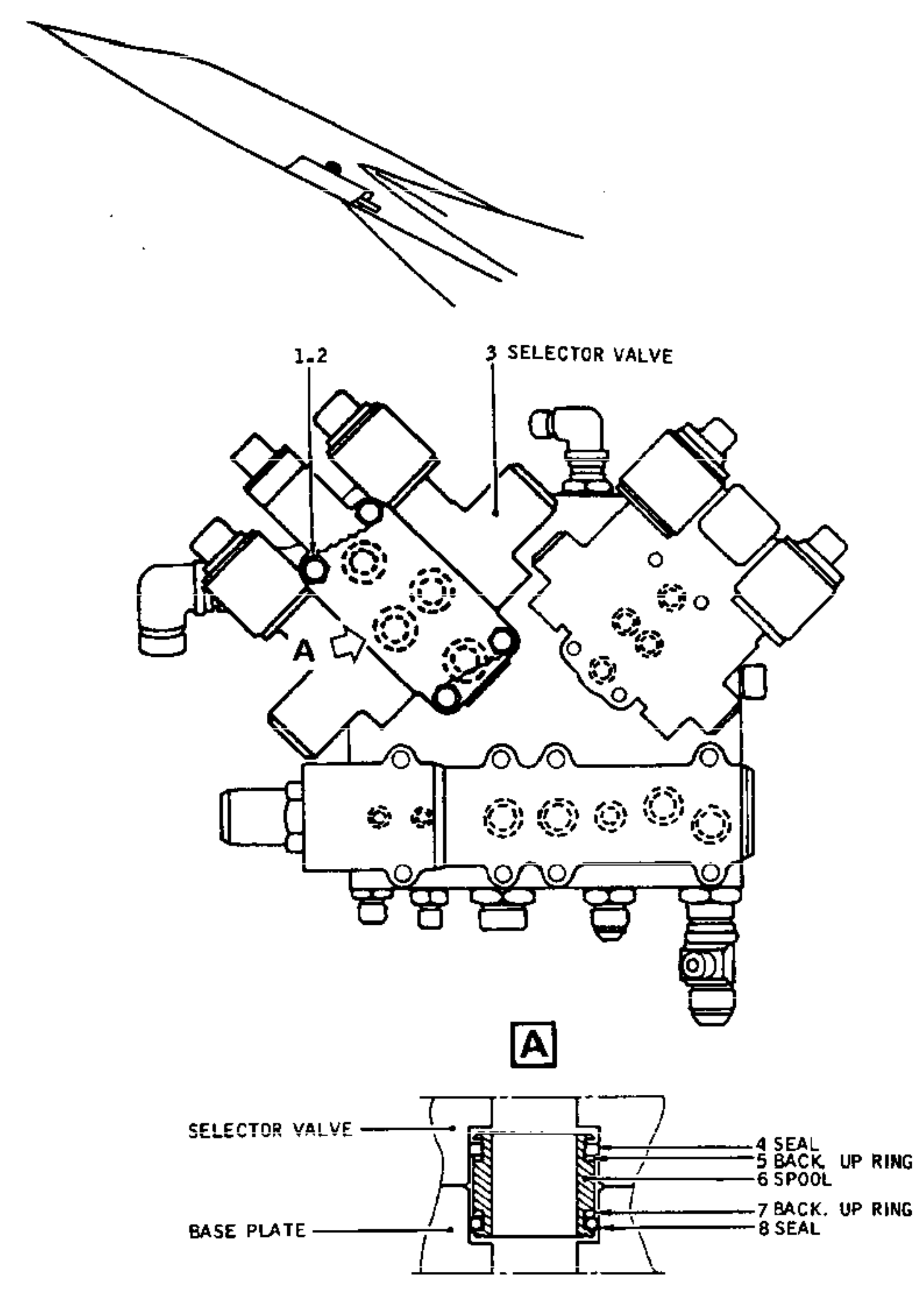
(1) Remove caps from base plate ports.

(2) Install spools in their bores.

CAUTION : THE END OF THE SPOOL BEARING THE MARKING SHALL BE INSTALLED FACING BASE PLATE.

(3) Remove caps from replacement selector valve. Position and install selector valve.

(4) Attach the selector by means of screws (1) fitted with washers (2).
Torque screws (1) to between 100 and 110 lbf.in.
(1.12 and 1.24.m.daN)



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Nose Gear Electro-Hydraulic Selector
Figure 401

(5) Wirelock screws (1).

(6) Remove cap and connect electrical connector.

(7) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(8) Remove hydraulic fluid container.

(9) Remove safety collars.

(10) Remove access platform.

(11) Remove safety clips and tags and reset circuit breakers.

(12) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(13) Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

(14) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

(15) Close landing gear doors by operating handle located on the nose landing gear leg. Install locking cap.

(16) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Tests

(1) Perform leak check on selector (Ref. 32-31-65, Adjustment/Test).

G. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(4) Close access doors.

(5) Remove warning notice from the flight compartment.

NOSE GEAR ELECTRO-HYDRAULIC SELECTOR - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

This topic deals with the pressurization and leakage test of the nose gear selector with the aircraft on the ground.

WARNING : PRESSURIZATION OF THE NORMAL LANDING GEAR SYSTEM, WITH AIRCRAFT ON WHEELS AND NORMAL LANDING GEAR CONTROL LEVER IN UP POSITION, CAN BE CARRIED OUT EXCEPTIONALLY IN CASE OF NEED (MAXIMUM PERMITTED FREQUENCY ONCE EVERY 100 FLIGHTS).

2. Leakage Test of Nose Gear Selector

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.468 m (11 ft. 4 in.)	
Snapwire, Dia 0.50 mm. (0.020 in.)	
Safety Sleeve - Nose Landing Gear Doors	E925002000

DESCRIPTION	PART NO.
Safety Collars - Main Landing Gear Door Actuating Cylinder	D921317000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position

(4) Make certain that visor is not uplocked.

(5) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated.

(7) Connect electrical ground power unit and energize the aircraft electrical network (24-41-00, Servicing).

C. Test

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(3) Remove locking caps and open doors by operating handles located on nose and LH main landing gear legs.

(4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Position access platform.

(7) Install safety sleeves on door actuating jacks.

(8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(10) Check nose gear selector for evidence of external leakage.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Make certain that nose gear wheels are centred.

(14) Open access door 123AB.

(15) On panel 2-123, connect terminal 14B on connector UT 1837 to ground.

(16) On nose gear, disconnect microswitch (G321) plug connect plug (G321A) terminal B to ground.

(17) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH UC WEIGHT SW 'B' SYS SUP	3-213	G 294	B 9

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) On First Officer's instrument panel, press O/RIDE PRESS pushbutton and place landing gear Normal control lever in UP position.

(20) Check gear selector for external leakage.

(21) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(22) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(23) On panel 2-123, restore relay box to its initial configuration.

(24) Connect microswitch (G321) plug.

(25) Remove safety clip and tag and reset circuit breaker (G294).

(26) Remove safety sleeves.

(27) Remove access platform.

(28) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(29) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(30) Close doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(31) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(32) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(33) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit

are illuminated. (Gear downlocked).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Close access doors.

(3) Reset O/RIDE and safety using snapwire, Dia. 0.50 mm. (0.020 in.) (Ref. 20-26-13).

NOSE GEAR UPLOCK - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nose gear uplock is hinged on a mounting located at the upper part of the nose landing gear bay.

The uplock is held in the uplock released position by a spring rod.

2. Nose Gear Uplock

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.220 m (10 ft 7 in)	-
Blanking Plugs/Caps	-
Circuit Breaker Safety Clips	-
Hydraulic Fluid Container	-

DESCRIPTION	PART NO.
Lockwire Dia. 0.024 in (0.60 mm) Corrosion Resistant Steel	-
Common Grease (Ref. 20-30-00, No.051)	-
Special Materials (Ref 20-30-00, No.119)	-
R PR 1720 SM (Ref. 20-30-00, No.351)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open landing gear doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP. REF
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in the flight compartment
R prohibiting use of landing gear Normal control lever
R and landing gear and door Emergency control lever.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety sleeves on gear door actuating jacks.

R C. Remove (Ref. Fig. 401)

(1) Disconnect and cap microswitch (20) electrical connector.

(2) Disconnect the hydraulic lines from the unlocking actuator (31).

(3) Disconnect hydraulic line support (4) from uplock.

(a) Remove cotter pins and remove nuts (3) and (27).

(b) Remove washers (2) and (26).

(c) Remove pins (1) and (25).

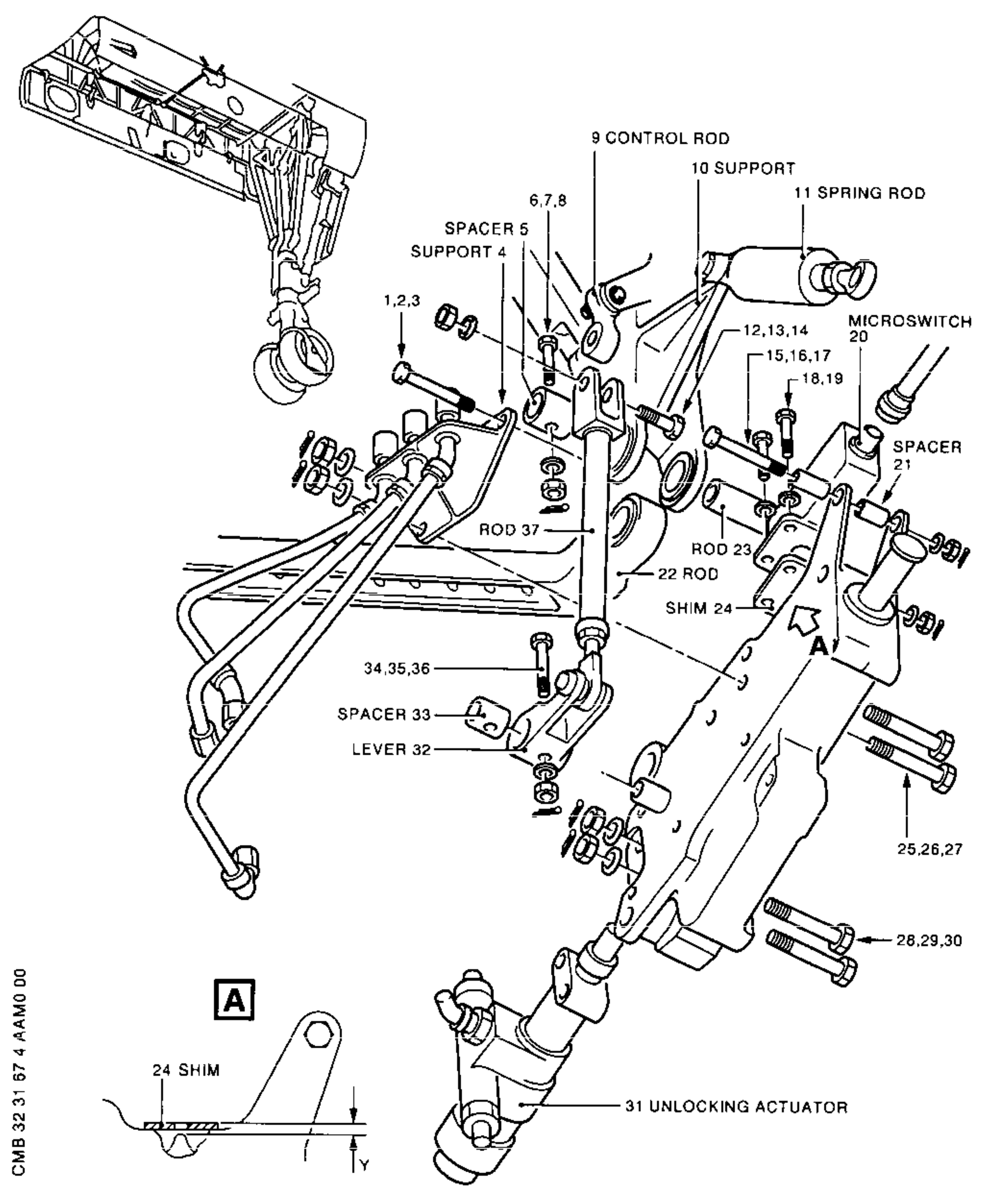
(4) Cap open hydraulic line ends.

(5) Disconnect rod (37) from control rod (9).

(a) Remove cotter pin and remove nut (13).

(b) Remove washer (14).

(c) Remove pin (12).



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NOSE GEAR UPLOCK
Figure 401

(6) Disconnect unlocking actuator (31) from uplock.

(a) Remove cotter pins and remove nuts (30).

(b) Remove washers (29).

(c) Remove pins (28).

(d) Remove unlocking actuator (31).

(7) Disconnect spring rod (11) from uplock.

(a) Remove cotter pin and remove nut (17).

(b) Remove washer (16).

(c) Remove pin (15) and retain spacers (21).

(8) Disconnect vertical support (10) from forward rod (22) of uplock.

(a) Remove cotter pin and remove nut (8).

(b) Remove washer (7).

(c) Remove pin (6) and retain spacer (5).

(d) Remove bolt (23).

(e) Remove uplock.

R D. Removal of Transferable Items

(1) On removed uplock.

(a) Remove unlocking lever (32) and rod (37) assembly.

(b) Remove cotter pin and remove nut (36).

(c) Remove washer (35).

(d) Remove pin (34).

(e) Remove unlocking lever (32) and retain spacer (33) for reinstallation.

R

R

(f) Remove microswitch (20)

- Cut and remove lockwire and remove screws (18) and washers (19).

(2) On replacement uplock.

(a) Ensure shim-pack (24) is fitted to uplock.

R
R (b) Manually lock uplock hook.

(c) Before installing microswitch, prepare as follows:

R - Ensure shim-pack (24) fitted to uplock.

R NOTE: If shim pack is not installed return the
R uplock to the servicing bay for fitment
R of shim pack.

R - Check Dimension Y (Ref. Fig. 401, Detail A)
R before installing the uplock. The clearance
R must be between 0.070 and 0.086 in (1.80 and
R 2.20 mm).
R If necessary, add or remove shims (24) to
R obtain the correct clearance.
R The shims are held in place with product
R No.351.
- Apply product No.119 to the annular volume around plunger.
- Install grease retaining membrane.

R (d) Install microswitch (20) (Ref. Fig. 401, Detail A) on uplock with screws (18). Torque screws (18) to between 25 and 30 lbf in (0.282 and 0.339 mdaN) and safety with lockwire (Ref. 20-21-13)

R (e) Install spacer (33) on uplock hinge pin.

R (f) Position and install unlocking lever (32) and rod (37) assembly on uplock hinge pin. Insert pin (34). Install washer (35). Tighten nut (36) and safety with cotter pin.

R (g) Mechanically unlock uplock hook and place in open position.

E. Install

(1) Position and install uplock, vertical support (10) and forward rod (22).

(a) Grease bolt (23) with product No.051 and install.

(b) Install spacer (5).

(c) Install pin (6).

(d) Install washer (7), nut (8).

(e) Tighten nut (8) and safety with cotter pin.

(2) Connect spring rod (11) to uplock.

(a) Position and install spacers (21) on each side of spring rod (11) spherical bearing.

(b) Grease pin (15) with product No.051 and install.

(c) Install washer (16) and nut (17).

(d) Tighten nut (17).
Torque to between 40 and 50 lbf in (0.45 and 0.58 mdaN).

(e) Safety nut (17) with cotter pin.

(3) Fit the base of unlocking actuator (31) with a new seal.

(4) Connect unlocking actuator (31) to uplock.

(a) Insert pins (28).

(b) Install washers (29).

(c) Install nuts (30) and torque to between 50 and 60 lbf in (0.565 and 0.678 mdaN).

(d) Safety nuts (30) with cotter pins.

(5) Connect hydraulic line support (4) to uplock.

(a) Insert pins (1) and (25).

(b) Install washers (2) and (26).

(c) Install and tighten nuts (3) and (27).

(d) Safety nuts (3) and (27) with cotter pins.

(6) Remove blanking caps and connect hydraulic lines to unlocking actuator.

(7) Connect rod (37) to control rod (9) with pin (12).

(a) Install washer (13).

(b) Install and tighten nut (14).

(c) Safety nut (14) with cotter pin.

(8) Remove cap and connect electrical connector to microswitch (20).

(9) Remove hydraulic fluid container.

(10) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(11) Remove safety sleeves.

(12) Remove access platform.

(13) Remove safety clips and tags and reset circuit breakers.

(14) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(17) Close gear doors by operating handle located on nose gear leg. Install locking cap.

(18) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Adjustment/Test

(1) Adjust uplock (Ref. Adjustment/Test).

(2) Before closing access doors and panels, carry out a double inspection of work performed and area affected as per instructions detailed in 05-55-11.

G. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Replenish Green and Yellow hydraulic tanks, if necessary (Ref. 12-12-29).

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(4) Close access doors.

(5) Remove warning notice from flight compartment.

3. Replace Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Safety Sleeve - Nose Landing Gear Doors	E925002000
Safety Collars - Main Landing Gear Doors Actuating Cylinder	D921317000
Lockwire Dia. 0.024 in (0.60 mm) Corrosion Resistant Steel	-
Special Materials (Ref. 20-30-00 No.119)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking caps and open gear doors by operating handles located on nose and LH main landing gear legs.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Install safety sleeves on gear door actuating jacks.

C. Remove

(1) Disconnect and cap electrical connector.

(2) Cut and remove lockwire, remove screws (18), retain washers (19) for reinstallation.

R (3) Remove microswitch (20)

R NOTE: After removing microswitch, ensure that all
R shims of the shim-pack are retained with the
R uplock.

D. Preparation of Replacement Component

(1) Before installing microswitch, prepare as follows.

(a) Make sure the uplock has a shim pack fitted.

NOTE: If shim pack is not installed the uplock must be returned to the servicing bay for servicing.

(b) Apply product No.119 to the annular volume around plunger.

(c) Install grease retaining membrane.

R E. Install

(1) Install microswitch (20).

NOTE: Ensure shims are fitted to the uplock (Ref. Fig. 401, Detail A).

(2) Install microswitch with screws (18) and washers (19). Torque screws (18) to between 25 and 30 lbf in (0.282 and 0.339 mdaN) and safety in pairs with lockwire (Ref. 20-21-13).

(3) Connect electrical connector.

F. Test

(1) Manually lock nose gear uplock hook.

(2) On First Officer's instrument panel, place landing gear Normal control lever in Down position.

(3) On First Officer's instrument panel, check on gears position indicating unit that UPPER LOCKS indicator light illuminates.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Make certain that uplock hook is not locked and open it manually.

(6) On First Officer's instrument panel, on gears position indicating unit, check that UPPER LOCKS light extinguishes.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove safety sleeves from gear door actuating jacks.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(4) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(8) Close access doors.

NOSE GEAR UPLOCK - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Adjustment of nose gear uplock after replacement.
Vertical adjustment of uplock is achieved by means of an adjustable spring rod.
The uplock roller can be adjusted laterally to achieve centre position in uplock hook.

2. Nose Gear Uplock

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001

DESCRIPTION	PART NO.
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Safety Stay	
Castellated Wrench	C46237
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.468 m (11 ft. 4 in.)	
Safety Barriers	
Lockwire Dia. 0.036 in. (0.90 mm) (Corrosion Resistant Steel)	
Common Grease (Ref. 20-30-00, No.051)	
Sealing Compound (Ref. 20-30-00, No.362)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Install safety stay.

(5) Position safety barriers.

(6) Make certain that the visor is not uplocked.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(8) Connect hydraulic ground power unit to green hydraulic system.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(11) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(15) Display a warning notice in the flight compartment.

(16) Install safety sleeves on nose gear door actuating jacks.

(17) Not applicable.

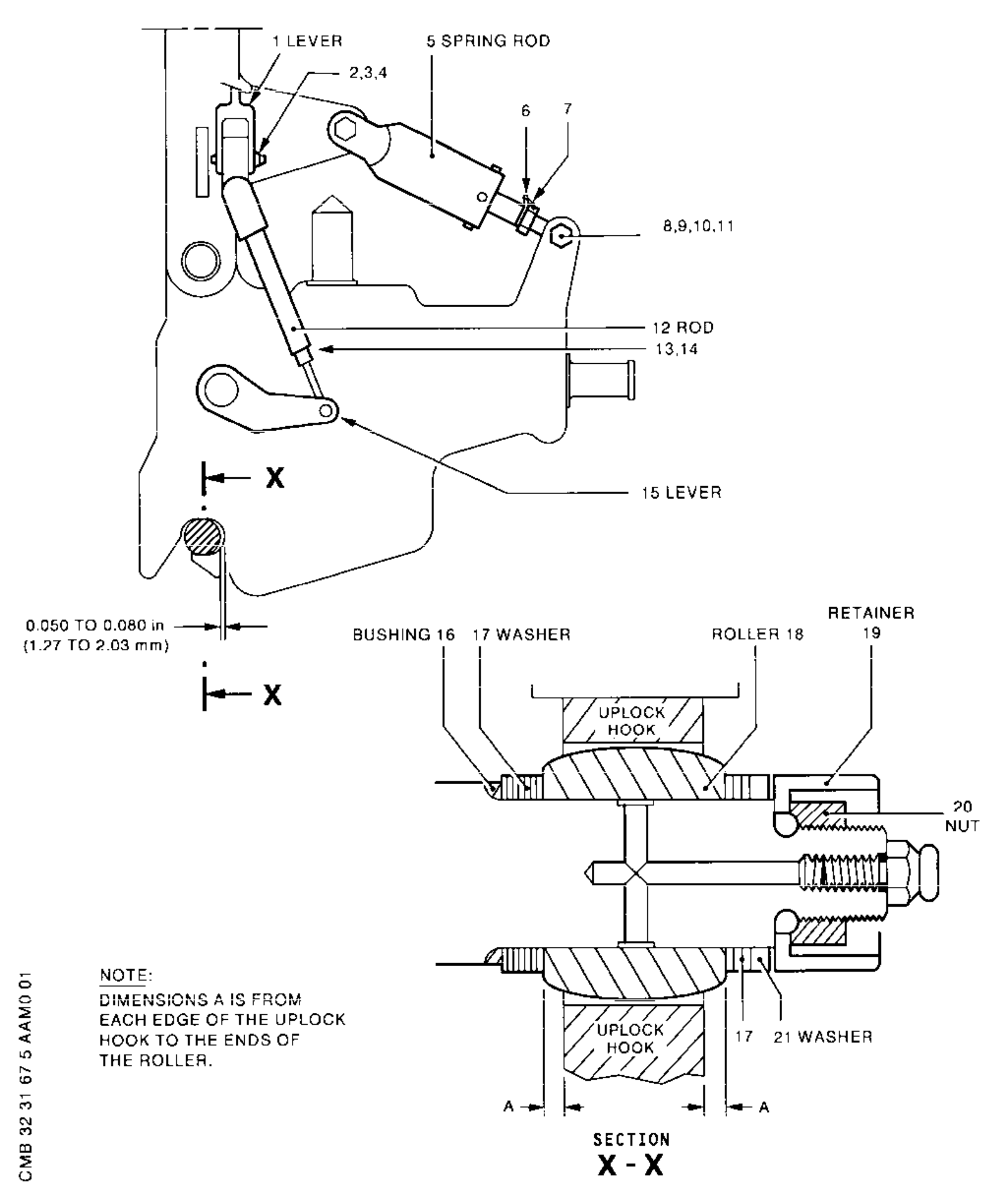
(18) Remove safety clips and tags and reset the circuit breakers.

(19) Remove landing gear and shortening mechanism safety devices.

(20) Not applicable.

C. Adjust

(1) Pressurize Green hydraulic system (Ref. 29-11-00,



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Nose Gear Uplock
Figure 501

Servicing).

WARNING: MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(2) On First Officer's instrument panel, place landing gear Normal control lever in UP position. Adjust hydraulic ground power unit delivery to obtain a slow gear retraction.

(3) Check that the uplock roller fits in the hook correctly and that the latter locks correctly.

(4) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Check centring of gear roller in uplock hook, by
R measuring dimensions A, from each edge of the uplock
R hook to the ends of the roller.

(6) If dimensions A are not equal:

(a) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(b) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(c) With the gear downlocked, shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) Install gear and shortening mechanism safety devices.

(e) Remove cotter pin and remove nut (20) with castellated wrench C46237.

(f) Remove retainer (19), washer (21), shim washers (17) and uplock roller (18).

(g) Determine the number of shim washers (17) to be placed on each side of uplock roller (18) in order to obtain dimensions A equal on each side
R of uplock hook. This could result in different
R numbers of shims on each side of the roller.

NOTE: Thickness of one shim washer : 1 mm (0.039 in). Bushing (16) must remain in place on pin.

(h) Install successively shim washers (17) roller (18) and shim washers (17) on pin.

(i) Install washer (21), retainer (19). Tighten nut (20) with castellated wrench C46237.

(j) Safety nut (20) with cotter pin, coat nut (20) and retainer (19) with Product No.362.

(7) Remove gear and shortening mechanism safety devices.

(8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(10) Maintain pressure of 2000 psi (140 bars) in system.

(11) Disconnect spring rod (5) from uplock.

(12) Position uplock so as to obtain a clearance of from 1.27 to 2.03 mm (0.050 to 0.080 in.) between roller (18) and uplock hook.

(13) Loosen nut (7), free lockwasher (6). Screw in or out the spherical end of spring rod (5) so that pin (8) connecting spring rod (5) to uplock can be freely inserted.

NOTE : Spring rod (5) shall be in neutral position.

(14) Connect spring rod to uplock.

(a) Position and install spacers (9) on each side of spring rod (5) spherical bearing.

(b) Grease pin (8) with product No.051 and install.

(c) Install washer (10), nut (11).

(d) Tighten nut (11).
Torque to between 40 and 50 lbf.in. (0.45 and 0.58 m.daN).

(e) Safety nut (11) with cotter pin.

(f) Install lockwasher (6).

(g) Tighten nut (7) and safety with lockwire (Ref. 20-21-13).

(15) Check that the clearance between the roller and the hook has not changed.

WARNING : MAKE CERTAIN THAT GEAR TRAVEL RANGES ARE CLEAR.

(16) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(17) With gears downlocked, shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (Gears downlocked).

(19) Install gear and shortening mechanism safety devices.

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Check adjustment of Ultimate Emergency gear extension control

(a) Open access door 221RF and remove locking pin from Ultimate Emergency gear extension control. Turn handwheel fully counterclockwise to reach mechanical stop.

(b) Disconnect rod assembly (12) from lever (1).
- Remove cotter pin, remove nut (3), retain washer (4) and remove pin (2).

(c) Hold spring rod (5) compressed to inner stop by turning uplock upwards.

(d) Push unlocking lever (15) downwards to mechanical stop position.

(e) Position rod assembly (12) end fitting in lever (1) fork fitting.
If required, adjust rod assembly (12) as follows :

- Cut and remove lockwire, loosen nut (14) until washers (13) can rotate independently of each other
- Rotate rod assembly (12) to obtain the desired value. Shorten rod (12) by half a turn.

NOTE : Make certain that rod (12) threaded end fitting is visible through witness hole in rod body.

- Position washers (13), tighten nut (14) and safety with lockwire (Ref. 20-21-13).

(f) Connect rod assembly (12) to lever (1).
- Install pin (2), washer (4). Tighten and safety nut (3) with cotter pin.

(g) Turn Ultimate Emergency gear extension control handwheel approximately 90° clockwise until locking pin can be inserted. Install locking pin.

(h) Close access door 221RF.

(22) Not applicable.

(23) Not applicable.

(24) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(25) Remove safety sleeves.

(26) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(27) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT GEAR DOOR TRAVEL RANGES ARE CLEAR.

(28) Close gear doors by means of operating handle located on nose gear leg. Install locking cap.

(29) On First Officer's instrument panel, place landing gear Normal control leveer in NEUTRAL position.

D. Tests

(1) Carry out a gear Emergency extension sequence. (Ref. 32-32-00, Adjustment/Test).

(2) Carry out a nose gear Ultimate Emergency extension sequence. (Ref. 32-33-00, Adjustment/Test).

(3) Carry out several gear Normal extensions. (Ref. 32-31-00, Adjustment/Test).

E. Close-Up

(1) Shut down and depressurize Green hydraulic system. Disconnect hydraulic ground power unit (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove safety barriers. Make certain that the area under the aircraft is clear.

(4) Remove safety stay.

(5) Lower the aircraft onto its wheels.

(6) Close access doors.

(7) Remove warning notice from flight compartment.

NOSE GEAR ACTUATING CYLINDER - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two identical hydraulic actuating cylinders extend or retract the nose landing gear.
Each actuating cylinder is attached to the aircraft structure by the cylinder end universal joint and to one of the brace arms by the rod end adjustable fork end-fitting.
The fork end-fitting serves to adjust actuating cylinder centre-to-centre length.

Whenever a single actuating cylinder is to be replaced, the mating cylinder must be removed at the same time and used for setting end fitting centre-to-centre distance on replacement component - thus avoiding uneven stressing of attach fittings.

2. Nose Gear Actuating Cylinder

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183621 lbf.) (Spec. M.F.P.)	07-10-0001

	DESCRIPTION	PART NO.
	Safety Jack Adapter	D920113200
	Jacking Pad Nose	D925370000
	Balancing Device - Pyramid Adapter LH	D921485000
	Balancing Device - Pyramid Adapter RH	D921485001
	Pyramid Adapter Lifting LH	D924008000
	Pyramid Adapter Lifting RH	D924008001
	Safety Stay	
	Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
	Electrical Ground Power Unit	
	Access Platform 3.220 m (10 ft. 7 in.)	
	Safety Barriers	
**ON A/C ALL		
B B	Adapter	C47319 or 2-32-1519-1BA
**ON A/C ALL		
	Extractor - Nose Landing Gear Retraction Jack Pin	D925066000
	Blanking Plugs/Caps	
	Rule - 500 mm (20 in.)	
	Container	
	Bullet - Nose Landing Gear Jack Rear Pin	D921605000
	Safety Sleeve - Nose Landing Gear Doors	E925002000
	Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
Socket Wrench - Actuating Cylinder - Hinge Pin Nut	E920113000

**ON A/C ALL

Common Grease (Ref. 20-30-00, No.051)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(5) Jack up aircraft (Ref. 07-11-00).

(6) Position safety stay.

(7) Position safety barriers.

(8) Make certain that visor is not uplocked.

(9) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(10) Connect hydraulic ground power unit to Green hydraulic system.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(12) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(13) Remove locking cap and open doors by operating handle located on nose gear leg.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Display a warning notice in flight compartment prohibiting use of landing gear Normal and Emergency control levers.

(17) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(18) Install safety sleeves on nose landing gear door actuating jacks.

(19) Depressurize Yellow hydraulic system. (Ref. 29-21-00, Servicing).

(20) Depressurize Green and Yellow hydraulic tanks. (Ref. 29-13-00, Servicing).

(21) Not applicable.

C. Remove

(1) Removal of cylinder for replacement :

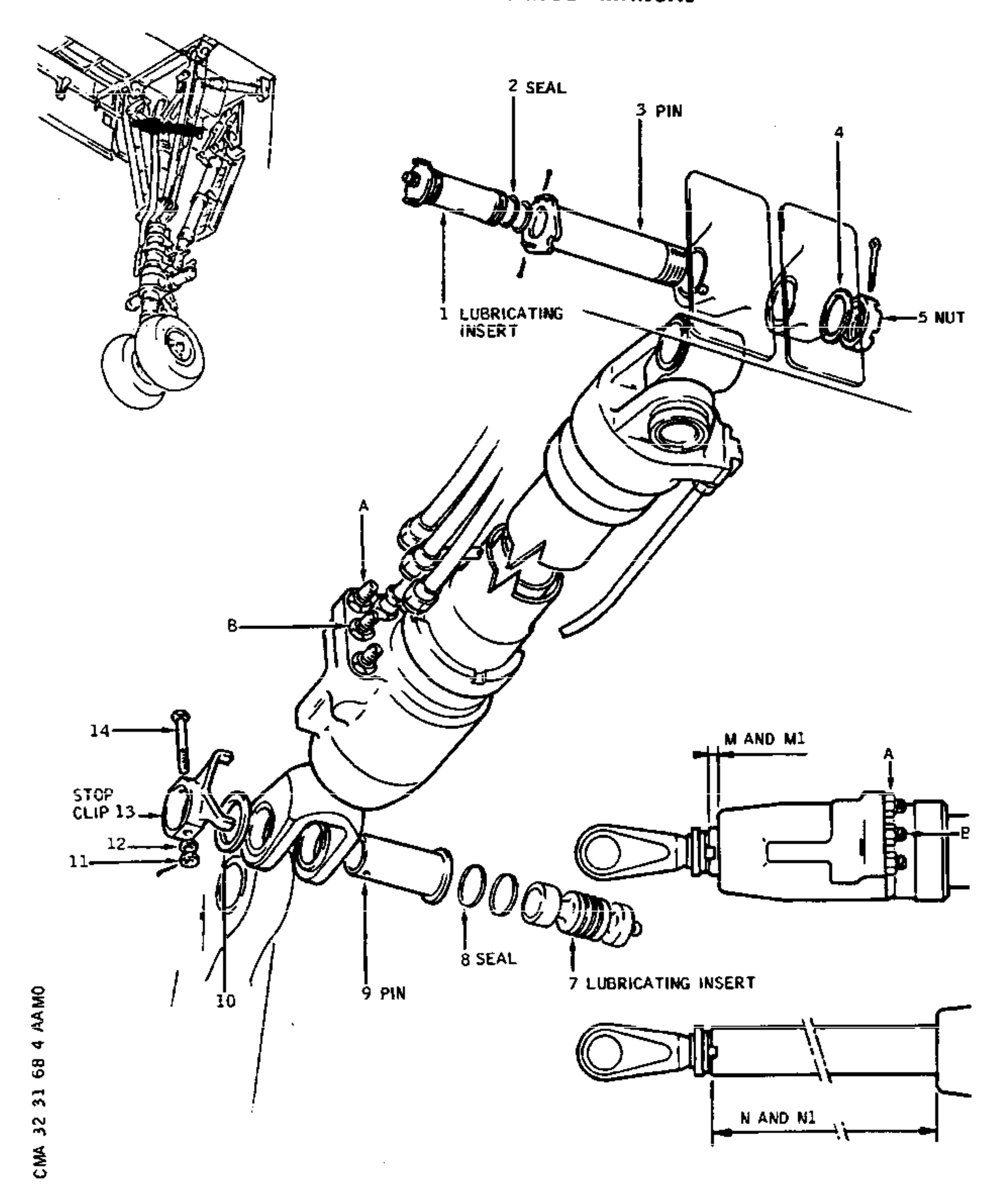
(a) Disconnect hydraulic lines from actuating cylinder. Cap open line ends.

(b) At actuating cylinder - gear leg hinge point :

(b1) Remove cotter pin and loosen nut (11).

(b2) Remove washer (12) extract screw (14).

(b3) Remove stop ring (13) and washer (10).



Nose Gear Actuating Cylinder
Figure 401

(b4) Remove lubricating insert (7).

(b5) Support cylinder and remove connecting pin (9).

(c) At the actuating cylinder - structure hinge point:

(c1) Remove cotter pin and remove nut (5).

(c2) Remove washer (4).

(c3) Remove cotter pins and extract lubricating insert (1).

(c4) Support weight of actuating cylinder and extract hinge pin (3) using extraction tool D925066000.

(d) Remove actuating cylinder to be replaced

(d1) Re-install connecting pin (9) with washer (10) and stop ring (13).

(2) Removal of matching actuating cylinder (Ref. para. (1)).

D. Preparation of Replacement Component

NOTE : The replacement actuating cylinder is filled with Product No.011.
It is equipped with the connecting pin (9) complete and thus provides specified end play between the pin and cylinder fork-end fitting.

WARNING : DO NOT INVERT THE PINS.

(1) Carry out the following operations on the replacement and mating actuating cylinder placed side by side on the bench.

(a) Pressurize both cylinders, through Port A, to 4000 psi (276 bars).

(b) On replacement actuating cylinder set centre-to-centre dimensions to match those of mating cylinder by adjusting end fitting, after loosening nut with adapter C47319.

NOTE : Under no circumstances shall the end fitting be unscrewed to the point where the adjustment-limit witness hole is visible.

In the case of replacement of both actuating cylinders, ensure that end fitting centre-to-centre distances are identical, within the following limits :
925 ± 5 mm (36.417 ± 0.196 in.).

(c) On each actuating cylinder, pressurized to 4000 psi (276 bars), with sliding rod retracted, measure distance "M" between actuating cylinder body and cylinder rod stop nut thrust face. Note that distance. Depressurize actuating cylinder.

(d) Pressurize the actuating cylinders through port B, to 4000 psi (276 bars).
On each actuating cylinder rod extended, measure distance N. Note that dimension. Depressurize cylinder.

(e) On lubricating insert (1) remove and discard seals (2). Install new seals.

(f) On lubricating insert (7) remove and discard seals (8). Install new seals.

E. Install

(1) Check that hinge pin on each actuating cylinder universal joint is correctly installed.

WARNING : PINS ON LH AND RH ACTUATING CYLINDER UNIVERSAL JOINTS MUST BE INSTALLED HEAD UPWARDS (NUT DOWNWARDS).

(2) If necessary reverse the position of universal joint pin heads.

(3) Installation of replacement actuating cylinder.

(a) At actuating cylinder - structure hinge-point.

(a1) Fit tool D921605000 to hinge pin (3).

(a2) Lubricate pin (3) with Product No.051.

(a3) Install pin in actuating cylinder - structure bore.

NOTE : Make certain that slot in hinge pin (3) shoulder is correctly aligned with locating pin installed in struc-

tural fork fitting.
Push pin (3) fully home.

(a4) Remove tool D921605000.

(a5) Install washer (4).

(a6) Tighten nut (5) using wrench E920113000. Torque to between 10 and 15 lbf.in. (0.110 and 0.170 m.daN).

(a7) Safety nut (5) with cotter pin.

(a8) Install lubricating insert (1) equipped with seals (2) in hinge pin (3).

(a9) Secure lubricating insert (1) and hinge pin (3) by means of two cotter pins.

(b) On the actuating cylinder - nose gear leg hinge point :

(b1) Lubricate hinge pin (9) with Product No.051.

(b2) Install pin (9) in actuating cylinder and nose gear leg bore.

(b3) Install and position lubricating insert (7) fitted with seals (8) in hinge pin (9).

(b4) Install washer (10).

(b5) Install stop clip (13).

(b6) Install screw (14) in stop clip (13) of hinge pin (9) and lubricating insert (7).

NOTE : Screw (14) must be installed head up.

(b7) Install washer (12). Tighten nut (11) and safety with cotter pin.

(c) Remove plugs and connect hydraulic lines

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE.
IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE

FORMING.

(4) Install mating actuating cylinder.

(5) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(6) Remove safety clips and tags and reset circuit breakers

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) On First officer's instrument panel, place landing gear Normal control lever in DOWN position.

(9) Maintain the hydraulic system pressure at 4000 psi (276 bars).

(10) Measure and note distance M1 on each actuating cylinder.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Remove landing gear and shortening mechanism safety devices.

(13) Not applicable.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(14) Pressurize green hydraulic system (Ref. 29-11-00, Servicing).

(15) On First Officer's instrument panel, place landing gear Normal control lever in UP position.
Slowly retract landing gear.

(16) With landing gear uplocked, maintain hydraulic system pressure at 4000 psi (276 bars).

(17) Measure and note distance N1 on each actuating cylinder

WARNING : MAKE CERTAIN THAT DOOR AND LANDING GEAR TRAVEL RANGES ARE CLEAR.

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(19) With landing gear downlocked, place landing gear

Normal control lever in NEUTRAL position.

(20) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(21) On First Officer's instrument panel, on gears position indicating unit, make certain that the four green arrows are illuminated.

(22) Install landing gear and shortening mechanism safety devices.

(23) Not applicable.

(24) On each actuating cylinder :

(a) Calculate the clearance M1 - M, landing gear extended.

(b) Calculate the clearance N - N1, landing gear retracted.

(c) If the combined clearance landing gear extended and retracted, is less or equal to 10 mm (0.393 in.) equalize the gear extended and gear retracted clearance, if necessary, by adjusting the actuating cylinder fork fitting.

(d) If the combined clearance exceeds 10 mm (0.393 in.) adjust the gear retracted clearance to 5 mm (0.196 in.) if necessary by tightening or loosening the adjustable end fitting.
The dimension of the gear extended clearance will depend on this adjustment.

(e) Tighten the actuating cylinder adjustable end-fitting locknut using adapter C47319.
Torque to 10 ± 2 m.daN (74 ± 15 lbf.ft.).

(f) Install spring clip on round nut.

(g) Lubricate actuating cylinder hinge pins.

(25) Not applicable.

(26) Not applicable.

(27) Not applicable.

(28) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make cer-

tain that no trace of hydraulic fluid remains.

(29) Remove safety sleeves.

(30) Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

(31) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(32) Close doors by operating handle located on nose gear leg.
Install locking cap.

(33) Place landing gear Normal control lever in NEUTRAL position.

F. Test

The main gear actuating cylinders shall be checked for leakage after carrying out a landing gear Emergency extension sequence (Ref. 32-32-00, Adjustment/Test).

G. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove safety barriers. Make certain that area under aircraft is clear.

(4) Remove safety stay.

(5) Lower aircraft onto its wheels.

(6) Replenish Green and Yellow hydraulic tanks, as required. (Ref. 12-12-29).

(7) Close access doors.

(8) Remove warning notice from flight compartment.

NOSE LANDING GEAR TELESCOPIC DRAG STRUT ASSY REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITION OF NOSE AND MAIN GEAR DOORS CORRESPONDS WITH THE ACTUAL POSITION OF THE OPERATING HANDLE LOCATED ON LH MAIN GEAR LEG.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The telescopic drag strut is hinged at the aircraft structure by means of a swivel joint. At its lower end the telescopic drag strut is attached directly to the landing gear leg by means of a connecting shaft.
Unlocking of nose gear telescopic drag strut is hydraulically operated while locking is mechanically operated.

The telescopic drag strut is equipped, at its upper section, with a microswitch (nose gear downlocked microswitch).

2. Strut Assy - Nose Gear Telescopic Drag

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, Lifing Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad-Nose	D925370000

DESCRIPTION	PART NO.
Balancing Device-Pyramid Adapter ,LH	D921485000
Balancing Device-Pyramid Adapter, RH	D921485001
Pyramid Adapter-Lifting, LH	D924008000
Pyramid Adapter-Lifting, RH	D924008001
Safety Stay	
Spanner - Nose Landing Gear Leg/Drag Strut	D924163000
Handling Equipment - Nose Undercarriage	E935022000
Guide Cone	C46597
Extractor/Inserter - Nose Under-carriage Drag Strut Pin	D925365000
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform - 3.468 m (11 ft. 4 in.)	
Hydraulic Fluid Container	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Blanking Caps/Plugs	
Circuit Breaker Safety Clips	
Lockwire 0.028 in. (0.7 mm) (Corrosion Resistant Steel)	
Common Greases (Ref. 20-30-00, No.051)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Jack up aircraft (Ref. 07-11-00).

(4) Position safety stay.

(5) Make certain that visor is not uplocked.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Connect hydraulic ground power unit to Green hydraulic system.

(8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(9) On First Officer's instrument panel, place the landing gear Normal control lever in DOWN position.

(10) Remove locking cap and open landing gear doors by operating handle located on nose landing gear leg.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC DOWN LOCK VISUAL IND	3-213	G 241	C 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(14) Display a warning notice in the flight compartment.

(15) Install safety collars.

(16) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(17) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

C. Remove
(Ref. Fig. 401)

(1) Remove door located under drag strut (Ref. 32-22-13, Removal/Installation).

(2) Remove cotter pins, remove nuts (24) retain washer (2) and (3) for re-installation and disconnect and remove both rods (34) from drag strut.

(3) Disconnect both rods (36) from fittings (7). Remove cotter pins and nuts (1), remove pins (4). Retain washers (2) and (3) for re-installation.

(4) Remove cotter pins and nuts (20), retain washers (19) for re-installation. Diconnect both rods (35) from drag strut.

(5) Remove rod assembly (35) and (36). Retain washers (18) for re-installation.

(6) Disconnect hydraulic lines from swivel joint.

(7) Disconnect and remove line from drag strut.

(8) Remove attaching screws (12), retain washers (13) and shims (14) for re-installation. Remove swivel joint from its bracket (11).

(9) Remove safety lock C22127 from telescopic drag strut.

(10) Unlock telescopic drag strut and extend it slightly by means of hand pump.

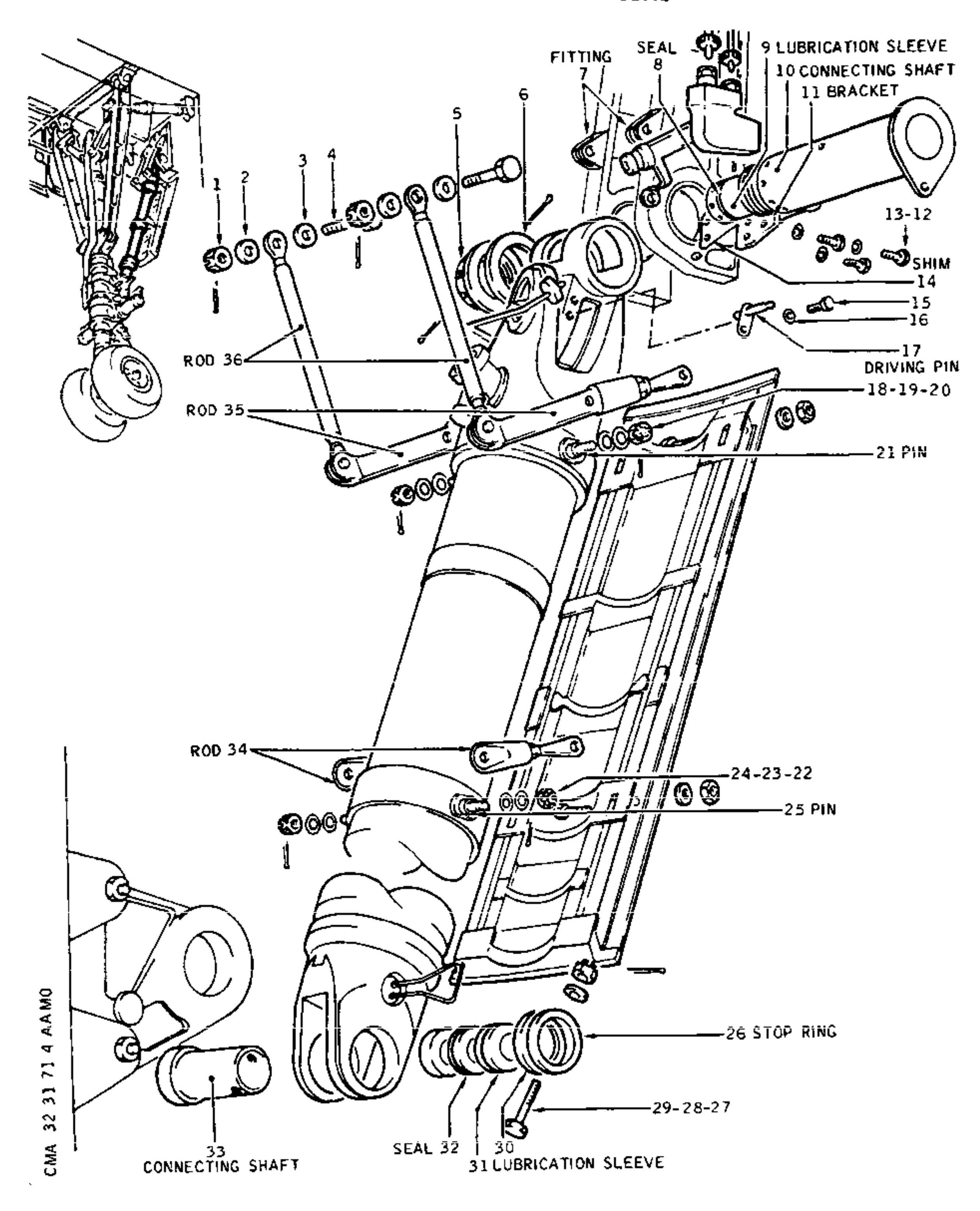
(11) Cap open line ends.

(12) Disconnect electrical wiring.

(13) Install tool E935022000.

(a) Secure the tool stirrup on the structure fitting located in the wheel well between FR27 and FR28.

(b) Attach the tool cross bar on pins (21) and (25) of drag strut, using washers (19) (23) and nuts



Telescopic Drag Strut
Figure 401

R

(20) (24).
Tension cable slightly.

(14) On drag strut/landing gear leg junction.

(a) Remove cotter pin, remove nut (27), washer (28), extract pin (29).

(b) Remove stop ring (26), washer (30) lubrication sleeve (31) extract connecting shaft (33).

(15) On drag strut/structure junction.

(a) Remove cotter pin and nut (5).

(b) Remove washer (6) and extract lubrication sleeve (9).

(c) Extract connecting shaft (10) by means of tool D925365000.

(16) Remove telescopic drag strut.

D. Preparation of Replacement Component

(1) On removed drag strut

(a) Unlock and remove screw (15) and washer (16).

(b) Remove driving pin (17).

(c) Remove cross bar of tool D935022000 from telescopic drag strut.

(2) On replacement drag strut.

NOTE : The telescopic drag strut is filled with Product No.011.

(a) Unlock telescopic drag strut and extend it slightly by means of hand pump.

(b) Install driving pin (17) on drag strut shackle.
Screw and tighten screw (15) fitted with washer (16).
Safety screw (15) with lockwire (Ref. 20-21-13).

(c) Install crossbar of tool D935022000 on pins (21) (25) of drag strut using washers (19) (23) and nuts (20) (24).

(d) Remove seals (8) and (32) from sleeves (9) and (31).
Fit sleeves (9) and (31) with new seals.

E. Install

(1) Hoist up and position telescopic drag strut.

(2) Drag strut/structure junction.

(a) Lubricate connecting shaft (10).

(b) Align bore of drag strut end fitting with bore of fork fitting on aircraft structure then insert connecting shaft (10) by means of tool D925365000.

<u>NOTE</u> : Make certain that the locating pin is correctly engaged in shaft (10) shoulder.

(c) Remove tool D925365000.

(d) Install and orientate washer (6).

<u>NOTE</u> : Make certain that locating pin is correctly engaged in washer (6) hole.

(e) Install and tighten screw (5).
Torque screw to between 10 and 15 lbf.in. (0.113 and 0.169 m.daN).

(f) Install lubrication sleeve (9) fitted with seal (8).

(g) Correctly locate lubrication sleeve (9) and secure shaft (10) nut (5) and sleeve (9) assembly with cotter pins.

(3) Drag strut/Leg junction.

(a) Install tool C46597 on connecting shaft (33).

(b) Lubricate shaft (33).

(c) Align gear leg fork fitting with drag strut bore then insert connecting shaft (33).

(d) Remove tool C46597.

(e) Install and correctly locate lubrication sleeve (31) fitted with seals (32).

(f) Install washer (30) and stop ring (26).

(g) Install shaft (29) securing shaft (33) and sleeve (31).

(h) Install washer (28).

(i) Install and safety nut (27) with cotter pin.

(4) Position shim (14) on bracket (11), install swivel joint on bracket (11) the pin (17) end is to be inserted in mobile part aperture of the swivel joint.

(a) Attach swivel joint and shim (14) to bracket by means of screws (12) fitted with washers (13).

(b) Install screws (12) and safety with lockwire (Ref. 20-21-13).

(5) Disconnect and remove tool E935022000.

(6) Connect hydraulic line to swivel joint.

(7) Position and connect hydraulic line to drag strut and to swivel joint.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE.
IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(8) Correctly locate and install washers (18) and (22) on pins (21) and (25).

(9) Install rods (34) on pins (25).

(a) Install washers (23).

(b) Tighten and safety nuts (24) with cotter pins.

(10) Install rods (35) on pins (21).

(a) Install washers (19).

(b) Install nuts (20) and safety with cotter pins.

(11) Couple rods (36) with fittings (7).

(a) Install pin (4) fitted with washers (3).

(b) Install washers (2).

(c) Install nuts (1) and safety with cotter pins.

(12) Connect electrical wiring.

(13) Lubricate both drag strut connecting shafts.

(14) Remove safety clips and tags and reset circuit breakers.

(15) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(16) Install drag strut door and perform adjustment (Ref. 32-22-13, Removal/Installation).

(17) Nose landing gear downlocked, make certain that safety lock (C22127) is in position on drag strut.

F. Tests

(1) On First Officer's instrument panel, on gears position indicating unit, make certain that green NOSE arrow is illuminated.

(2) Open access door 221YF.

(3) Press pushbutton G242. Check that a red luminous spot and a white luminous beam are visible on nose gear telescopic drag strut downlock indicator.

(4) Close access door 221YF.

G. Close-Up

(1) Remove hydraulic fluid container.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment and that no trace of hydraulic fluid remains.

(3) Remove safety collars.

(4) Remove access platform.

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

(7) Close landing gear doors by operating handle located on nose gear leg. Install locking cap.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Disconnect hydraulic ground power unit.

(11) Replenish Green hydraulic tank as required (Ref. 12-12-29).

(12) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(13) Close access doors.

(14) Make certain that area under the aircraft is clear.

(15) Remove safety stay.

(16) Lower aircraft onto its wheels.

(17) Remove warning notice from flight compartment.

3. Replace microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Access Platform 3.22m (10 ft. 7 in.)	
Special Materials (Ref. 20-30-00 No. 119).	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(4) On centre console, make certain that ADC 1 and ADC 2 switches are in OFF position.

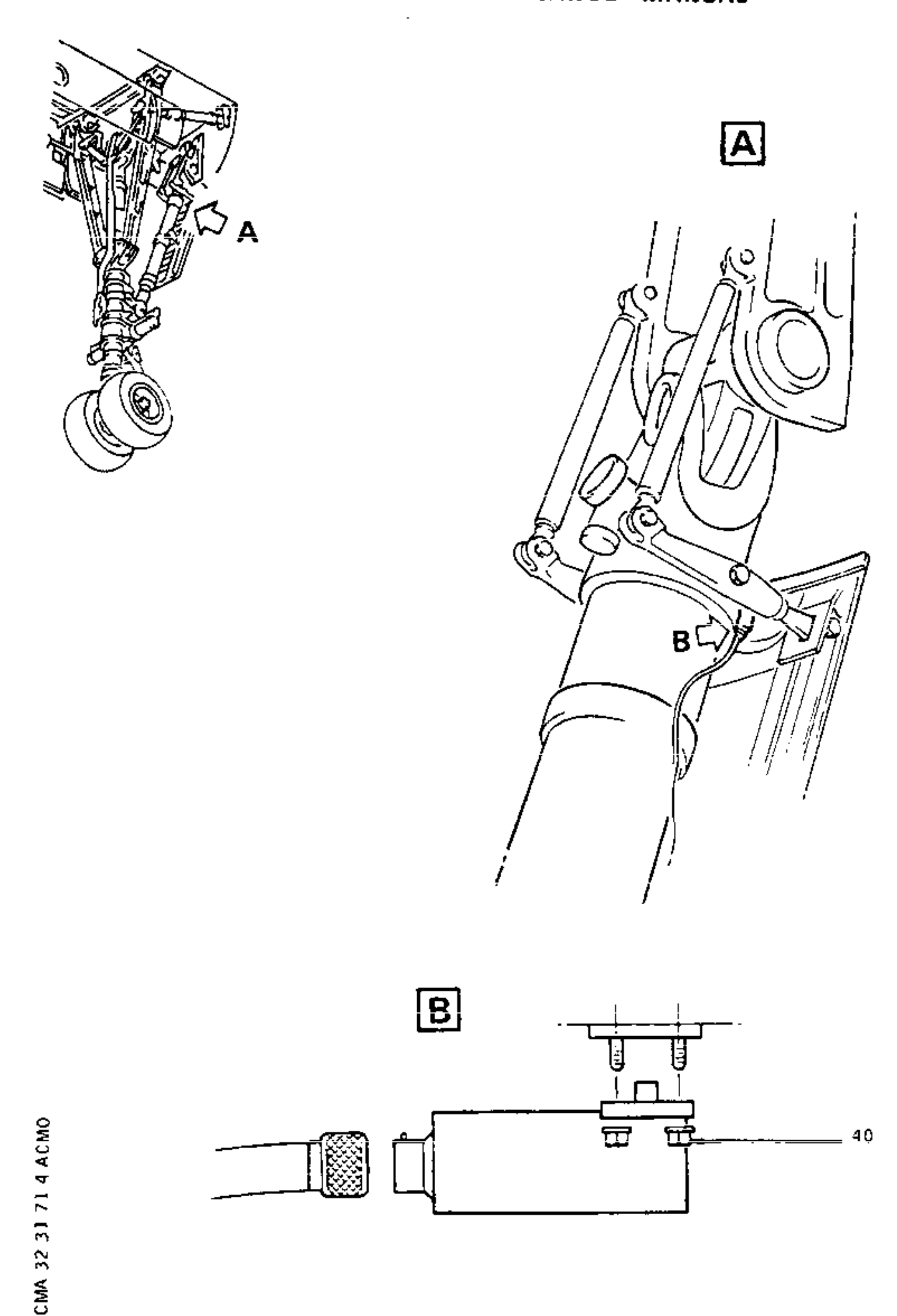
C. Remove (Ref. Fig. 402)

(1) Disconnect and cap electrical connector.

(2) Remove screws (40) and remove microswitch.

D. Preparation of Replacement Component.

If a new microswitch is to be installed, prepare as follows :



Microswitch
Figure 402

- Apply Product No. 119 to the annular volume around plunger
- Install grease retaining membrane (supplied in a bag with the microswitch).

E. Install

(1) Position microswitch and install using screws (40).

(2) Connect electrical connector.

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Remove safety clips and tags and reset circuit breakers.

(3) On First Officer's instrument panel, on gears position indicating unit, make certain that green NOSE arrow is illuminated.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit, (Ref. 24-41-00, Servicing).

(3) Remove access platform.

NOSE GEAR AND DOOR SAFETY ELECTROVALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nose gear and door safety electrovalve isolates the landing gear extension system if the visor is uplocked, and the landing gear retraction system if the landing gear shock absorbers are compressed.
The nose gear and door safety electrovalve is located in the nose landing gear bay, left hand side.

2. Safety Electrovalve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.22 m (10 ft. 7 in.)	
Circuit Breaker Safety Clips	
Blanking Plugs/Caps	
Safety Sleeve-Nose Landing Gear Doors	E925002000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

NOTE : If it is impossible to open doors in Normal mode open doors in Emergency mode (Ref. 32-32-00, Servicing).

(11) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) Depressurize Green hydraulic system tank

(Ref. 29-13-00, Servicing).

(13) Install safety collars on landing gear door actuating jacks.

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

(2) Mark, disconnect and cap hydraulic lines.

(3) Cut and remove lockwire and remove screws (1). Retain washers (2) for reinstallation. Remove electrovalve.

D. Preparation of Replacement Component

NOTE : The safety electrovalve is filled with hydraulic fluid No.011 (Ref. 20-30-00).

(1) On removed electrovalve, remove hydraulic line unions and install on replacement electrovalve with new seals. Do not tighten elbow unions.

(2) On removed electrovalve, remove check valve (3) and install with new seal in port D of replacement electrovalve. Tighten check valve (3) and torque to 700 ± 5 lbf.in. (7.908 ± 0.056 m.daN).

E. Install

(1) Position electrovalve and install using screws (1) and washers (2).

(2) Connect hydraulic lines in accordance with marking made during removal.

(3) Tighten elbow unions.

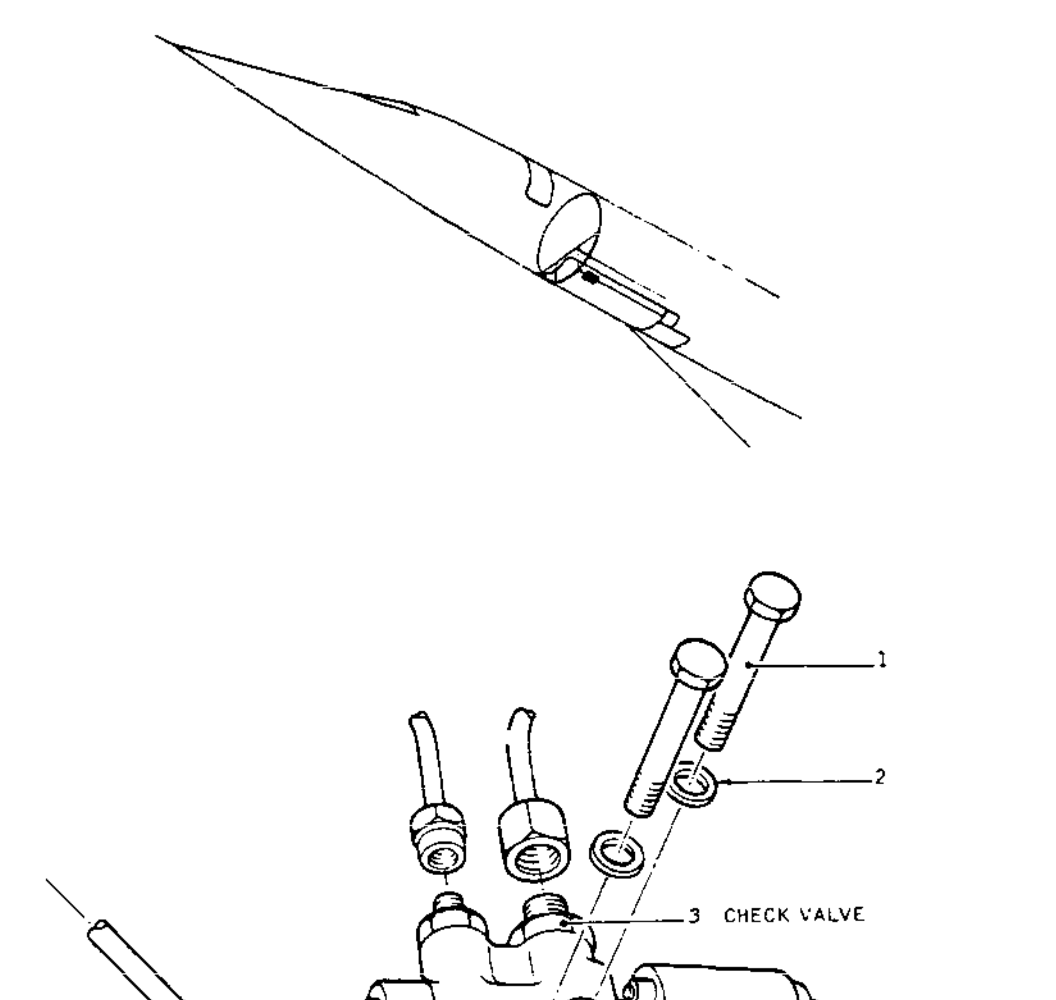
(4) Connect electrical connector.

F. Test

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove safety collars from landing gear door actuating jacks.

(3) Pressurize Green hydraulic system tank (Ref. 29-13-00, Servicing).



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Safety Electrovalve
Figure 401

R

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Place droop nose and visor in up position (Ref. 27-62-00, Servicing).

(6) Remove safety clip and tag and reset circuit breaker.

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) Place operating handle located on nose landing gear leg in doors closed position ; indicator plate showing white.

(9) The doors do not close.

(10) Restore operating handle located on nose gear leg to doors open position ; indicator plate showing red.

(11) Lower visor and droop nose (Ref. 27-62-00, Servicing).

(12) Place operating handle located on nose gear leg in doors closed position ; indicator plate showing white.

(13) The doors close.

(14) Open nose gear doors by operating handle located on nose landing gear leg.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(17) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8

(18) Install landing gear and door safety collars.

(19) Check electrovalve for external leakage.

(20) Remove safety collars.

(21) Remove safety clip and tag and reset circuit breaker (G3).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(22) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(23) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(24) Place operating handle located on nose gear leg in doors closed position ; indicator plate showing white. Install locking cap.

(25) The doors close.

(26) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(27) Shut down and depressurize Green hydraulic System (Ref. 29-11-00, Servicing).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Close access doors.

END OF THIS SECTION

NEXT

TAIL GEAR SOLENOID OPERATED SELECTOR - REMOVAL/INSTALLATION

R WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON
R THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE
R ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The tail gear selector is fitted to a manifold located at the forward right-hand side of the tail gear bay.
The sealing between selector and manifold is achieved through spools.

2. Tail Gear Solenoid Operated Selector

A. Equipment and Materials

DESCRIPTION	PART NO.
Hydraulic Fluid Container	
Access Platform 3.85 m (12 ft. 6 in.)	
Circuit Breaker Safety Clips	
Blanking Plugs/Caps	
R Lockwire - Dia. 1 mm (0.041 in.) Steel Corrosion Resistant	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position and

prohibit use of lever by displaying a warning notice.

(3) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Depressurize Green hydraulic tank (Ref. 29-13-00, Servicing).

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

(2) Remove screws (2) retain washers (3) for reinstallation.

(3) Remove selector (1) and discard spools (6).

(4) Cap ports on manifold.

D. Preparation of Replacement Component

NOTE: The replacement selector is filled with Product No.011 (Ref. 20-30-00).

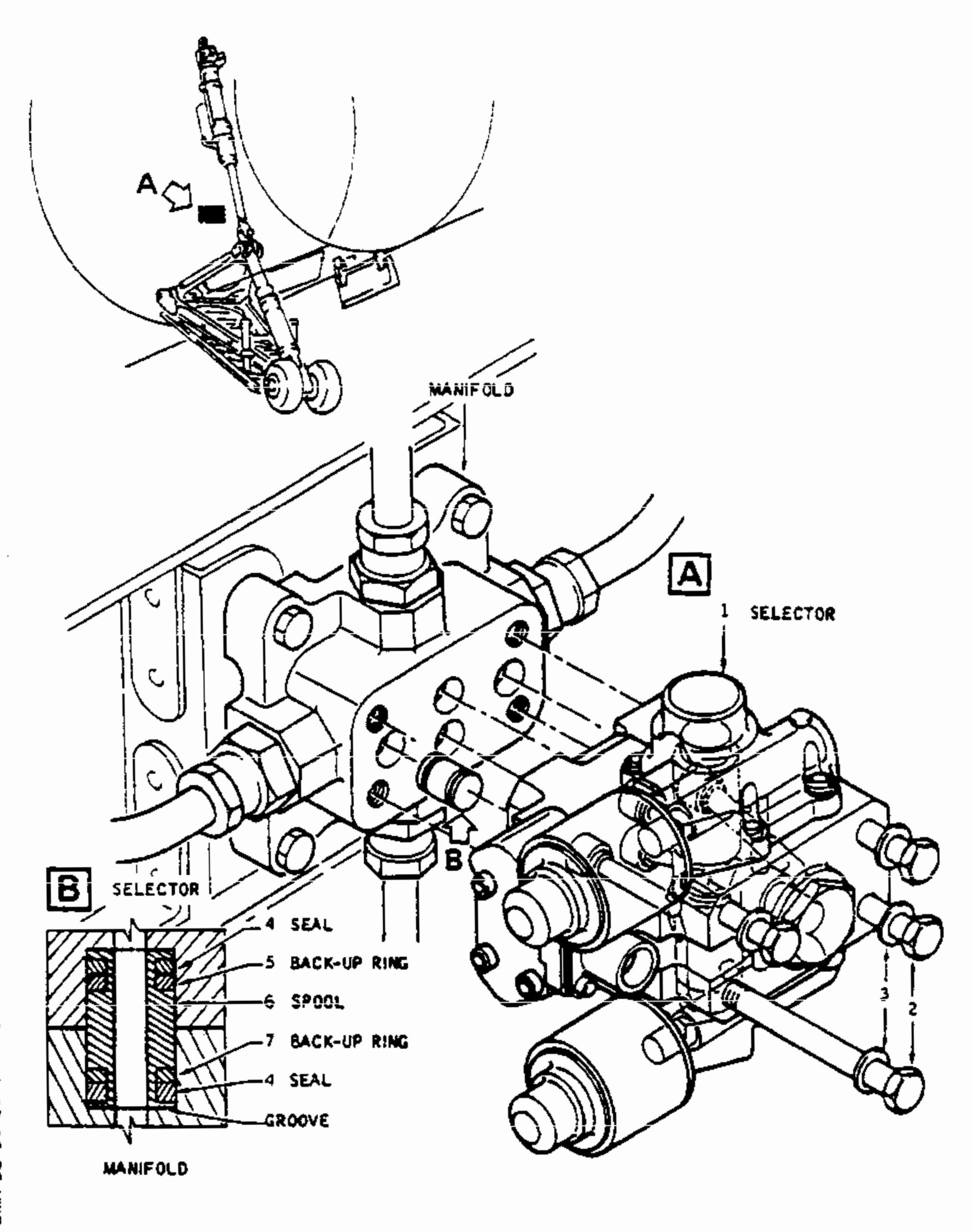
R (1) Make certain that replacement spools are correctly fitted
R with their back-up rings (5) and (7), and square section
R seals (4).
R

E. Install

(1) Remove caps from manifold.

(2) Install spools (6) fitted with seals.

CAUTION: THE GROOVED END OF THE SPOOL MUST BE INSTALLED FACING THE MANIFOLD.



Tail Gear Selector
Figure 401

(3) Install selector (1) and secure with screws (2) and washers (3).

(4) Wirelock screws (2).

(5) Connect electrical connector.

(6) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(7) Remove safety clips and tags and reset circuit breakers

(8) Pressurize Green hydraulic tank (Ref. 29-13-00, Servicing).

F. Test

Carry out a tail landing gear extension and retraction test (Ref. 32-71-00, Adjustment/Test, para. 3.).

Check the equipment carefully after test for evidence of external leakage.

G. Close-Up

(1) Remove hydraulic fluid container.

(2) Replenish hydraulic tanks as required (Ref. 12-12-29).

(3) Remove access platform.

(4) Remove warning notice.

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TAIL GEAR ACTUATING CYLINDER - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT TRAVEL RANGES OF CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The tail gear hydraulic actuating cylinder is of the double-acting type with automatic rod locking in both uplocked and downlocked position. A microswitch is installed at each end of the tail gear actuating cylinder.

2. Tail Gear Actuating Cylinder

A. Equipment and Materials

DESCRIPTION	PART NO.
Sling - tail landing gear and jack	D935174002
'A' frame positioning tool tail bumper door	E925097000
Castellated wrench	C47147 or 2-32-1520-1BA
Guide and extraction cone	C47162
Air/hydraulic tool kit	-
Access platform 3.850 mm (12 ft 6 in)	-
Blanking plugs/caps	-
Circuit breaker safety clips	-
Common grease (Ref. 20-30-00, No. 051)	-

DESCRIPTION	PART NO.
Special materials (Ref. 20-30-00, No. 121)	-
Warning notice	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position. Prohibit operation by displaying a warning notice in flight compartment.

(3) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Depressurize Green and Yellow hydraulic systems. (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(5) Depressurize Green and Yellow hydraulic tanks. (Ref. 29-13-00, Servicing).

(6) Install access platform.

R (7) Install sling D935174002 and secure to the tail landing gear.

(8) Disconnect side door link rods so that side doors remain open when gear is retracted (Ref. 32-71-12, Removal/Installation).

C. Remove (Ref. Fig. 401)

R (1) Disconnect the Green and Yellow hydraulic system pressure, and the Green return, hydraulic pipe lines from the tail landing gear actuating cylinder. Install suitable blanks to the cylinder ports and to the open hydraulic lines.

R (2) Disconnect the actuator electrical connectors. Cap and stow connectors as required.

R (3) At the tail landing gear actuating cylinder - tail gear hinge point:

R (a) Remove and discard the cotter pin (10).

R (b) Remove and retain the nut (9), the lock bolt (12) and the bush (11).

R (c) Using guide and extraction cone C47162, remove hinge pin (7).

R WARNING: DO NOT LET THE TAIL LANDING GEAR DROP UNDER ITS OWN WEIGHT WHEN CARRYING OUT THIS TASK.

R (d) Slacken-off the restraining straps of sling D935174002 to lower the tail landing gear.

R CAUTION: MAKE CERTAIN THAT THE MAIN DOOR OF THE TAIL LANDING GEAR DOES NOT COME INTO CONTACT WITH THE AIRFRAME STRUCTURE WHEN THE TAIL LANDING GEAR IS IN THE DOWN POSITION.

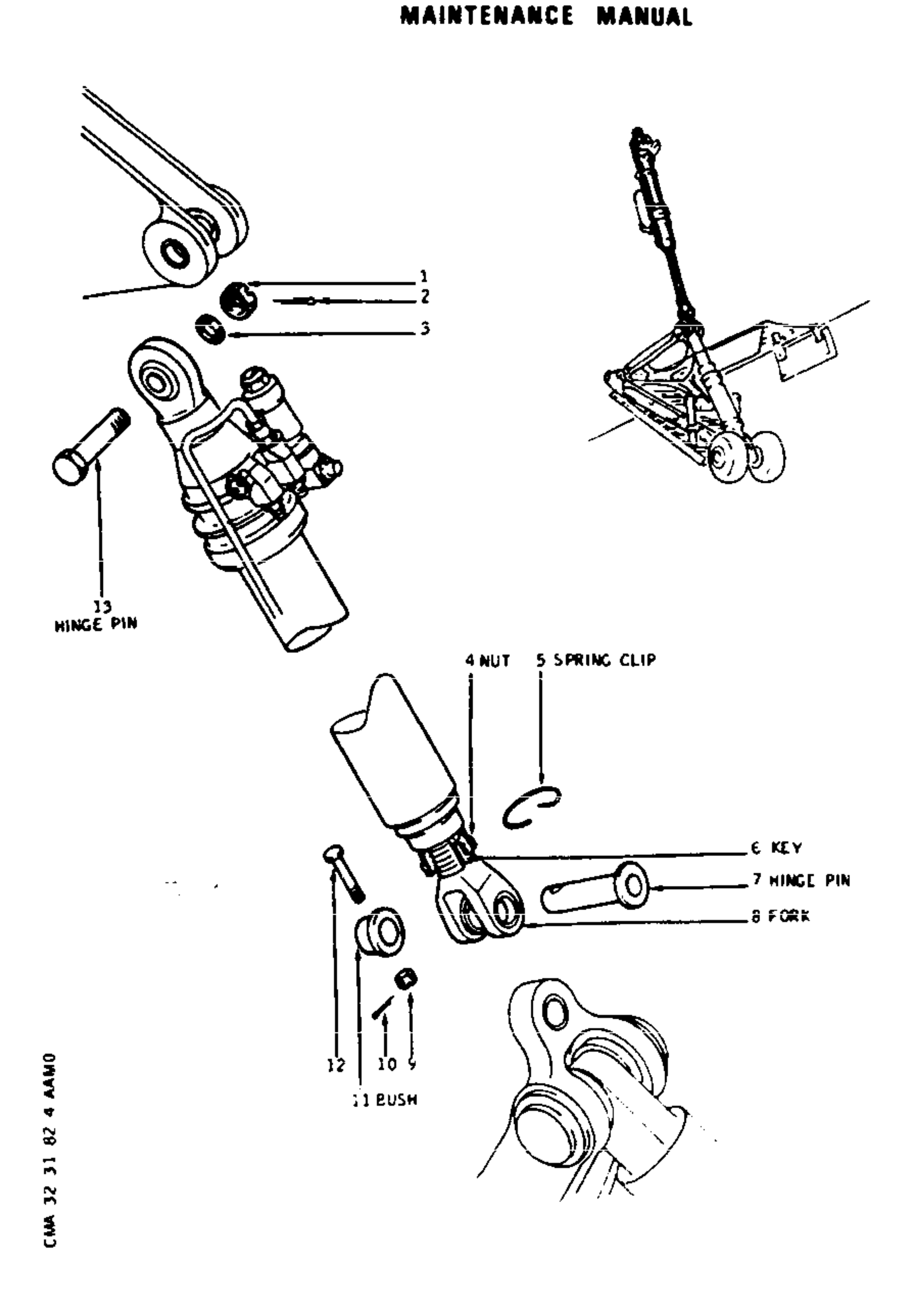
R (4) At the actuating cylinder structure hinge point:

R (a) Remove and discard cotter pin (2).

R (b) Remove and retain the castellated nut (1) and washer (3).

R (c) With the weight of the actuating cylinder supported, remove, and retain, the hinge pin (13).

R (d) Remove the actuating cylinder.



Tail Gear Actuating Cylinder
Figure 401

D. Preparation of Replacement Component

NOTE: The replacement actuating cylinder is filled with product No. 011 (Ref. 20-30-00).

(1) Using Air/Hydraulic tool kit, lock the rod of replacement actuating cylinder in 'uplocked' position.

E. Install

(1) Install and position replacement actuating cylinder with hydraulic line union support plate facing the rear of the aircraft.

R (2) At the actuating cylinder - at the structure hinge
R point:

R (a) Lubricate hinge pin (13) using product No. 051
R (Ref. 20-30-00).

R (b) Offer up the replacement actuating cylinder and
R insert pin (13) through the support structure
R and the actuating cylinder.

R (c) Install washer (3) and nut (1).

(d) Tighten nut (1). Torque to between 50 and 52.5 lbf ft (6.779 and 7.118 mdaN).

(e) Safety by means of cotter pin (2).

(3) At actuating cylinder - Tail gear hinge point:

(a) Using sling D935174002 retract gear and install positioning tool E925097000.

R NOTE: The procedure for the use of tool
R E925097000 is given in 32-71-00,
R Adjustment/Test.

(b) Lower gear until rocker beam rests on positioning tool E925097000.

(c) Smear key (6) and threads of nut (4) and fork end-fitting (8) with product No. 121 (Ref. 20-30-00).

(d) Lubricate hinge pin (7) and install, head up. If necessary, adjust actuating cylinder fork end-fitting as follows:

- Remove spring clip (5)
- Unscrew nut (4) using wrench C47147
- Remove key (6)
- Turn fork end-fitting to achieve required dimension.

NOTE: On no account must the witness hole in the fork end-fitting (8) appear flush with the outer face of nut (4).

- Align keyways and install key (6)
- Tighten nut (4) using wrench C47147
- Install spring clip (5).

(e) Install bush (11) with holes aligned to receive stop bolt (12).

R (f) Install the stop bolt (12), with the head
R uppermost, through the bush (11) and the hinge
R pin (7).

R (g) Install nut (9). Torque load the nut to a
R maximum torque load of 17.70 lbf in (0.2 mdaN)
R and install a new cotter pin (10).

(4) Remove tools D935174002 and E925097000.

(5) Extend gear using Air/Hydraulic tool kit.

R (6) Remove the blanking caps and re-connect:

R - the Green pressure hydraulic pipe line
R - the Yellow pressure hydraulic pipe line
R - the Green return hydraulic pipe line.

WARNING: WHEN A HOSE WITH A BEND RADIUS IS REMOVED FOR INSTALLATION, CARE MUST BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE. IF REQUIRED FOR RE-INSTALLATION IT MUST BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

R (7) Remove caps and reconnect the electrical connectors.

(8) Connect side door link rods (Ref. 32-71-12, Removal/ Installation.

(9) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(10) Remove access platform.

(11) Remove safety clips and tags and reset the circuit breakers.

(12) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

F. Test

Carry out a tail gear retraction and extension and check actuating cylinder for leakage (Ref. 32-71-00, Adjustment/Test paragraph 3).

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) Close access doors.

(3) Remove warning notice from flight compartment.

INTENTIONALLY BLANK

3. Replace Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Access Platform 3.850 m (12 ft. 6 in.)	
Locking Sleeve - Tail Landing Gear Jack	D925406000
Lockwire 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Special Materials (Ref. 20-30-00, No.106)	
R Special Materials (Ref. 20-30-00, No. 119)	
R Warning Notice	

B. Prepare

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position and prohibit operation by displaying a warning notice in flight compartment. R

(2) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16

(3) Position access platform.

(4) Install locking sleeve D925406000.

C. Remove

(1) Disconnect and cap electrical connector.

(2) Cut lockwire on attach screws.

(3) Remove product No.106

(4) Remove attach screws.

(5) Remove microswitch and mark its position on corresponding mounting.

D. Preparation of Replacement Component

R If a new microswitch is to be installed, prepare as follows :

R - Apply Product No. 119 to the annular volume around plunger
R - Install grease retaining membrane (supplied in a special
R bag with the microswitch).

E. Install

(1) Using reference marks made during removal, position microswitch on its mounting.

(2) Install microswitch on mounting using attach screws.

R (a) Tighten screws and lockwire (Ref. 20-21-13).

(b) Coat screws with product No.106.

(3) Connect microswitch electrical connector.

F. Test

Carry out a test to check that microswitch is correctly connected (Ref. 32-31-82, Adjustment/Test).

G. Close-Up

(1) Remove locking sleeve D925406000.

(2) Make certain that working area is clean and clear of miscellaneous items of equipment.

(3) Remove access platform.

(4) Remove safety clips and tags and reset circuit breakers.

R (5) Remove warning notice from flight compartment.

TAIL GEAR ACTUATING CYLINDER - ADJUSTMENT/TEST

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two microswitches are fitted to the tail gear actuating cylinder, one on the lower and one on the upper part.
Each microswitch is operated by mechanical actuator linked to the operation of the tail gear actuating cylinder. The adjustment of each actuator necessitates the removal of the corresponding microswitch.
Adjustment is not necessary after replacement of a microswitch. A test must be carried out to check that plug is correctly connected.

2. Microswitch Control Adjustment

A. Equipment and Materials

DESCRIPTION	PART NO.
Test set - tail landing gear	D921593000
Circuit breaker safety clips	-
Access platform - 3.850 m (12 ft 6 in)	-
Warning notice	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position. Display warning notice in flight compartment prohibiting operation of lever.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(5) Install access platform.

(6) Disconnect connecting rod from each side door. (Ref. 32-71-12, Removal/Installation).

WARNING: KEEP THE DOORS OPEN.

(7) Remove tail gear wheels (Ref. 12-37-00).

(8) Open access door 314AR.

(9) Pass test set D921593000 cabling through access door and connect it to microswitch cable plug on aircraft and to electro-hydraulic selector socket.

NOTE: Make certain that there is no safety collar in position on the actuating cylinder.
Check that the 3 position switch on the test set is in NEUTRE (neutral) position, and that supply switch is in ARRET (off) position.

(10) Connect test set D921593000 to 28V AC supply.

(11) Energize test set D921593000.

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) Unlock actuating cylinder, using test set D921593000.

Maintain the cylinder in half extended position.

(14) Shut down hydraulic ground power unit and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) De-energize test set D921593000.

(16) Disconnect plug from microswitch concerned.

(17) Remove microswitch (Ref. 32-31-82, Removal/ Installation).

C. Adjust (Ref. Fig. 501)

(1) Remove plug (1).

(2) Loosen nut (2) and loosen screw (3) several turns.

(3) Check that screw (5) withdrawal distance "A" is 2.3 mm - 0, - 0.2 mm (0.090 in - 0, - 0.007 in.).

WARNING : THIS OPERATION MUST ONLY BE CARRIED OUT WITH THE ACTUATING CYLINDER, UNLOCKED, AND STEM HALF EXTENDED.

(4) If required, obtain the correct distance by adjusting screw (5) and locknut (4).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Energize test set D921593000.

(7) Lock tail gear in one of the two following configurations :

(a) With actuating cylinder stem uplocked, for control of the upper microswitch.

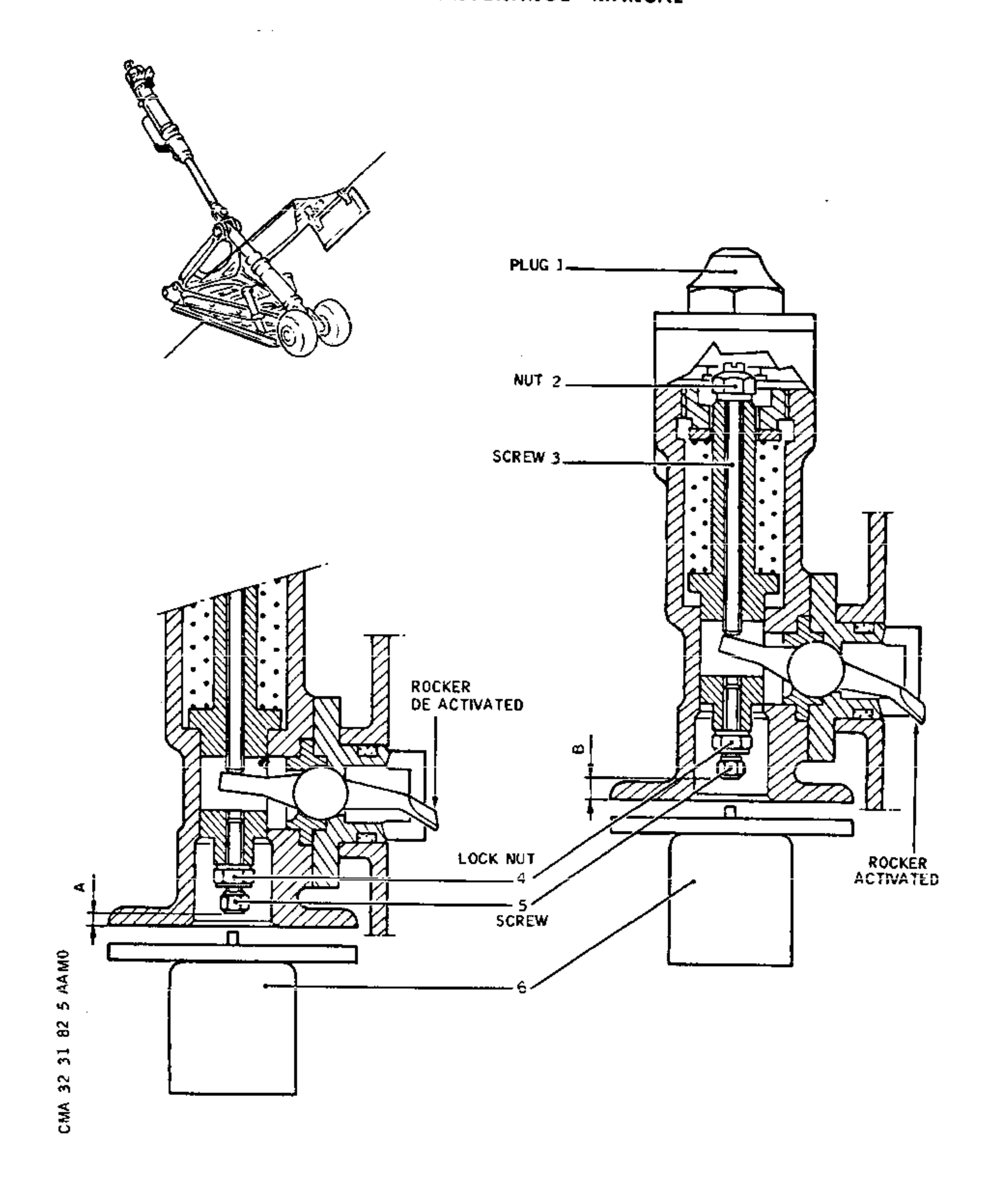
(b) With actuating cylinder stem downlocked, for control of the lower microswitch.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) De-energize test set D921593000.

(10) Tighten screw (3) to obtain distance "B" of 4.5 + 0.1, + 0 mm (0.177 + 0.003, + 0 in.).

NOTE : This dimension is the distance between the face



Microswitch Actuator Adjustment
Figure 501

of the screw (5) and the contact surface of the microswitch (6).

(11) Tighten nut (2).

(12) Replace plug (1).

(13) If upper microswitch has been adjusted, return tail gear to downlocked position.

(14) Position and secure microswitch (Ref. 32-31-82, Removal/Installation).

(15) Connect plug of microswitch concerned.

(16) Disconnect test equipment D921593000 cabling.

(17) Reconnect aircraft cable microswitch plug and hydraulic selector plug.

D. Close-Up

(1) Connect each side door connecting rod (Ref. 32-71-12, Removal/Installation).

(2) Install wheels (Ref. 12-37-00).

(3) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(4) Close access doors.

(5) Remove access platform.

(6) Remove safety clips and tags and reset circuit breakers

R (7) Remove warning notice from flight compartment.

3. Test Microswitches (G55, G56)

A. Equipment and Materials

DESCRIPTION	PART NO.
Ohmmeter	
Access Platform 3.850 m (12 ft. 6 in.)	
Locking Sleeve - Tail Gear Jack	D925406000
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	
R Warning notice	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.
Display a warning notice prohibiting operation of this lever.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform

(5) Install tool D925406000.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Tests

(1) Test of tail gear downlocked microswitch (G55).

(a) Remove safety clip and tag and reset circuit breaker G51, panel 1-213, map ref. N16.

(b) On First Officer's instrument panel, on gears position indicating unit make certain that green T arrow is illuminated.

(2) Test of tail gear uplocked microswitch (G56).

(a) Trip safety and tag circuit breaker G51, panel 1-213, map ref. N16.

(b) Disconnect connector G55A.

(c) Ground terminal E of connector G55A.

(d) Remove safety clip and tag and reset circuit breaker G51.

(e) On First Officer's instrument panel, on gears position indicating unit, red indicator light corresponding to green T arrow illuminates.

(f) Trip safety and tag circuit breaker G51.

(g) Connect connector G55A.

(h) Remove safety clip and tag and reset circuit breaker G51.

R (i) On First Officer's instrument panel, on gears po-
R sition indicating unit, make certain that green T
R arrow is illuminated.

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Remove tool D925406000.

(3) Remove safety clips and tags and reset circuit breakers

(4) Remove warning notice from flight compartment.

(5) Remove access platform.

LANDING GEAR NORMAL CONTROL SWITCH - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The landing gear Normal control switch controls the Normal retraction and extension of the landing gear.
R The Normal control switch is attached to the First Officer and
R centre instrument panels supporting structure (zone 10-211).
R

2. Landing Gear Normal Control Switch

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Make certain that Green hydraulic system is depressurized (Ref. 29-11-00, Servicing).

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR RAISE CONT	15-215	G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR LOWER CONT		G 4	A 9

(4) Remove brake ANTI-SKID and NOSEWHEEL steering test indicator (Ref. 32-43-56, Removal/Installation).

(5) Remove angle of attack and 'G' indicator (Ref. 34-11-12, Removal/Installation).

(6) Remove flight control surface position indicator (ICOVOL) (Ref. 27-36-13, Removal/Installation).

C. Remove (Ref. Fig. 401)

(1) Remove electroluminescent panel (6).

(a) Remove screw (7).

(b) Remove screw (8) and washer (9).

NOTE : GEAR O/RIDE operating assembly remains attached to electroluminescent panel (6).

(2) Disconnect and cap electrical connector

(3) Remove screws (4) and retain washers (3) for reinstallation.

(4) Remove screws (5)

(5) Back off nuts (2) and remove Normal control switch.

D. Preparation of Replacement Component

Make certain that replacement control switch bears no signs of impact damage, cracks or corrosion.

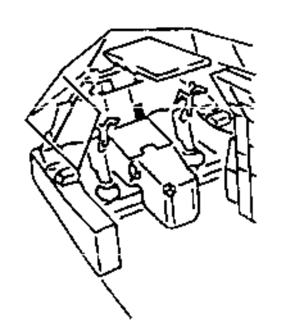
E. Install

(1) Position Normal control switch making certain that washers (1) are against nuts (2). Install screws (5), washers (3) and screws (4) and tighten.

R NOTE : It may be necessary to adjust rear attachment
R holes in order to insert screws (Item 4).

(2) Connect electrical connector

(3) Install electroluminescent panel (6).



1 2

3 4

L/GEAR UP

8 9 5

DOWN

7

GEAR O/RIDE

6 ELECTROLUMINESCENT PANEL

CMA 32 31 91 4 AAMO

Landing Gear Normal Control Switch
Figure 401

(a) Install screw (8) and washer (9).

(b) Install screw (7).

(c) Tighten screws (8) and (7).

(4) Remove safety clips and tags and reset circuit breakers

F. Test

R (1) Carry out a landing gear Normal retraction and extension (Ref. 32-31-00, Adjustment/Test).

R R R R (2) Carry out a landing gear control lever up selection/interdiction test with LH main landing gear shock absorber compressed and override of interdiction (Ref. 32-31-00, paragraph E).

G. Close-Up

(1) Install angle of attack and 'G' indicator (Ref. 34-11-12, Removal/Installation).

(2) Install flight control surface position indicator (ICOVOL) (Ref. 27-36-13, Removal/Installation).

(3) Install brake ANTI-SKID and NOSEWHEEL steering test indicator (Ref. 32-43-56, Removal/Installation).

(4) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

MAIN GEAR BOGIE BEAM ALIGNMENT MICROSWITCH - SERVICING

WARNING: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main gear bogie beam alignment microswitch assembly is a sealed unit and replenishment of lubricating fluid may be
RB carried out with or without removing the assembly from the pitch damper.

2. Replenishment

RB A. Normal Procedure

(1) Remove main gear bogie beam microswitch assembly in accordance with 32-31-92 p/b 400.

(2) Remove blanking plug (Ref. Fig. 301) and drain lubricating fluid from body.

NOTE: If there is no residual fluid in body, microswitch assembly is to be replaced with a serviceable unit.

(3) Holding the body vertically, fill with 4cc of A.S.F.4 fluid.

(4) Refit plug and torque tighten to 44-88 lbf in (0.5-1.0 mdaN) then wirelock.

(5) Refit bogie beam microswitch assembly in accordance with 32-31-92 p/b 400.

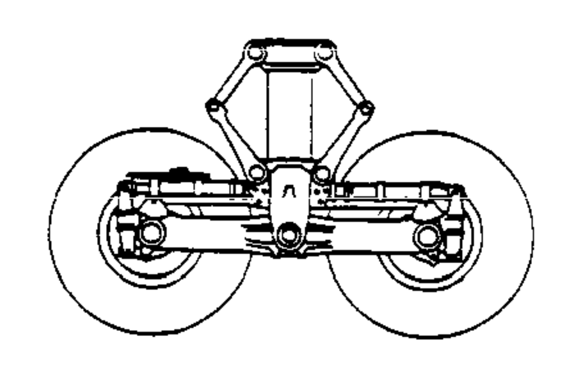
B NOTE: Prior to adjustment/test of bogie aligned
B microswitch, it must be verified that the
B bogie beam is perpendicular to the MLG leg
B using a clinometer.

RB B. Alternative Procedure

RB NOTE: The following alternative procedure allows the
RB microswitch assembly to be serviced without
RB removing it from the pitch damper.

RB (1) Disconnect the wiring harness from the switch
RB assembly. Unlock and remove the 4 bolts and washers
RB securing the switch cover to the switch body and
RB remove the switch cover.

RB (2) Remove the 4 bolts and washers securing the switch to
RB the switch body and withdraw the switch.



A
B
PLUG

A
6
5
EYE-END FITTING
7
4
1
3
FORK FITTING
8
SEAL
2
1
LOCK
WASHER

B
9-10-11

CMA 32 31 92 3 AAM0

Microswitch Assembly
Figure 301

B

RB (3) Add up to a maximum of 4 cc's of A.S.F.4 fluid into
RB the roller guide cavity above the switch roller.

RB (4) Refit the switch and switch cover and wirelock the
RB cover bolts. Reconnect the wiring harness to the
RB switch assembly.

MAIN GEAR BOGIE BEAM ALIGNED MICROSWITCH - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. The main landing gear includes two pitch dampers, but only the forward one is fitted with a microswitch. This microswitch serves to inhibit landing gear retraction when the pitch damper is not perpendicular to the leg.

B. During replacement of a forward pitch damper the microswitch must be removed for subsequent installation on the replacement pitch damper.

2. Microswitch - Main Gear Bogie Beam Aligned

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	

B. Prepare

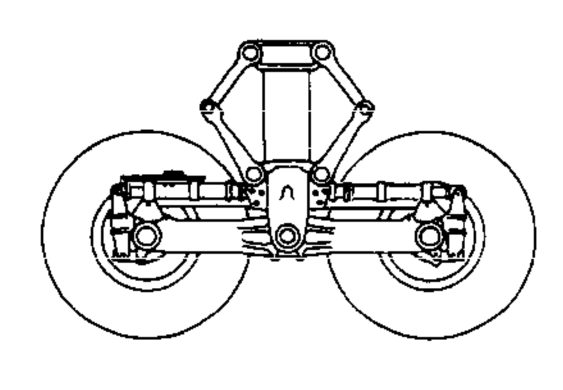
(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel check that landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

C. Remove
(Ref. Fig. 401)



A
B

A

6
5
EYE-END FITTING
7
4
8
3
FORK FITTING
SEAL
2
1
LOCK
WASHER

B

9-10-11

CMA 32 31 92 4 AAMO

Microswitch Assembly
Figure 401

R

R (1) Disconnect and cap microswitch electrical plug.

(2) On microswitch plunger attachment :

(a) Remove cotter pins and hinge pin (8). Retain washer (4) and shim washers (6) for reinstallation.

(3) On shock absorber cylinder attachment :

(a) Remove cotter pins and nuts (9). Retain washers (10) for reinstallation.

(b) Remove bolts (11), remove microswitch.

D. Preparation of Replacement Component

(1) If forward pitch damper is to be replaced :

R (a) Remove fork fitting (3) discard lock washer (1) and metal-plastic seal (2).

R (b) On replacement damper remove plug blanking off bore associated with fork fitting (3) stud end. Install lock washer (1), seal (2) and fork fitting (3).

E. Install

(1) On pitch damper body attachment point :

(a) Position and secure microswitch unit with bolts (11).

(b) Install nuts (9) and washers (10). Safety nuts (9) with cotter pin.

(2) On microswitch plunger attachment point :

R (a) Install eye-end fitting (7) in fork fitting (3) together with shim washers (6).

(b) Install hinge pin (8) together with thin washer (4) and safety with cotter pin (5).

R (3) Remove protective cap and connect microswitch electrical plug.

(4) Remove safety clips and tags and reset circuit breakers.

F. Test

Carry out an adjustment of the bogie beam alignment microswitch actuator (Ref. 32-31-92, Adjustment/Test).

RB NOTE : Prior to adjustment/test of bogie beam alignment
RB microswitch, it must be verified that the bogie beam
RB is perpendicular to the MLG leg using a clinometer.

G. Close-Up

Not applicable.

3. Replace Microswitch (G18) (G21)

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Lockwire 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	
R R Special Materials (Ref. 20-30-00, No. 119)	

B. Prepare

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(2) Trip, safety and tag the following circuit breakers

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

C. Remove (Ref. Fig. 402)

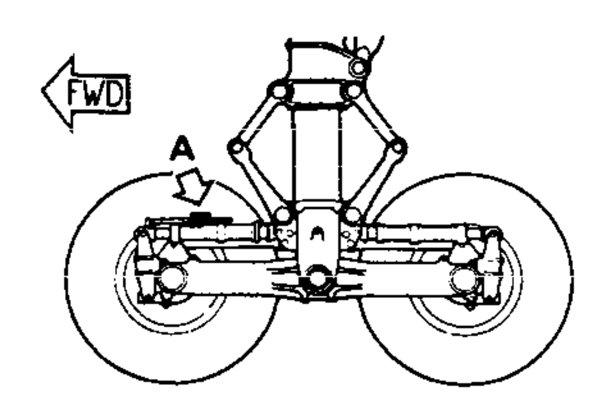
(1) Disconnect and cap microswitch electrical plug.

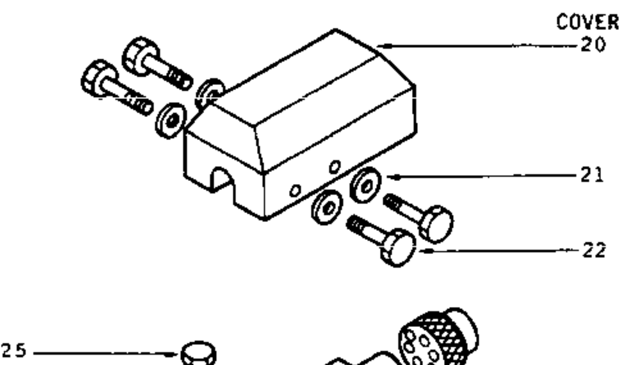
(2) Cut lockwire, remove screws (22), retain washers (21) for reinstallation and remove cover (20).

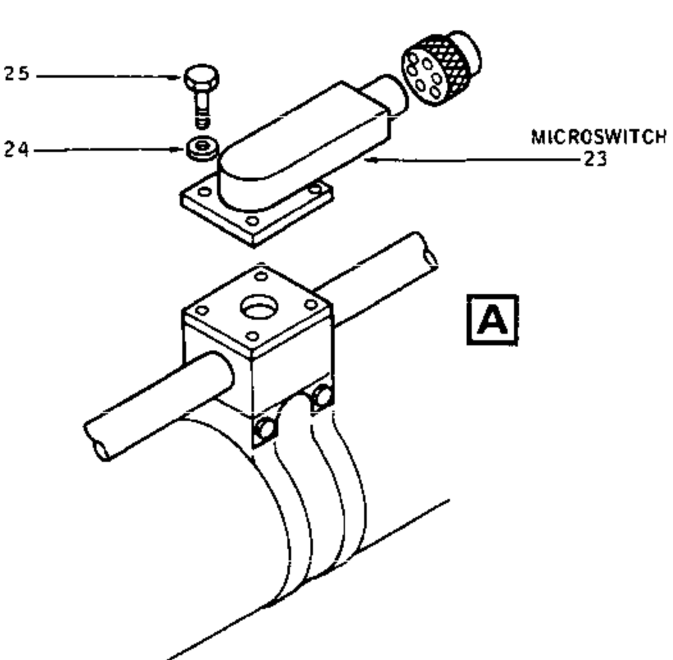
(3) Cut lockwire, remove screws (25), retain washer (24) for reinstallation and remove microswitch (23).

D. Preparation of Replacement Component

R If a new microswitch is to be installed, prepare as fol-
R lows :
R - apply product No. 119 to the annular volume around plun-
R ger
R - install grease retaining membrane (supplied in special bag







CMA 32 31 92 4 ACMO

R Microswitch
Figure 402

with microswitch)

E. Install

(1) Position microswitch and attach with washers (24) and screws (25). Safety screws with lockwire (Ref. 20-21-13).

(2) Position cover (20) and attach with washers (21) and screws (22). Safety screws with lockwire (Ref. 20-21-13).

(3) Remove protective cap and connect microswitch electrical plug.

(4) Remove safety clips and tags and reset circuit breakers.

F. Test

Carry out a connection test of replacement microswitch (Ref. 32-31-92, Adjustment/Test).

RB NOTE: Prior to adjustment/test of bogie aligned
RB microswitch, it must be verified that the bogie beam
RB is perpendicular to the MLG leg using a clinometer.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

MAIN GEAR BOGIE BEAM ALIGNED MICROSWITCH - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The bogie beam aligned microswitch is installed directly above the microswitch actuating mechanism located on the upper part of the front pitch damper.
The bogie beam aligned microswitch is actuated by an adjustable rod/roller assembly.
The adjustable rod ensures that the roller engages in the rod groove when the bogie beam is perpendicular to the landing gear leg.

2. Adjustment of Bogie Beam Aligned Microswitch Control

A. Equipment and Materials

DESCRIPTION	PART NO.
Nose and Main Gear Wheel Change Jack (Inflated Tyres)	07-20-0001
Electrical Ground Power Unit	
Safety Collars - Main Landing Gear Doors, Actuating Cylinder	0921317000

DESCRIPTION	PART NO.
RB Micrometer depth gauge	2-98174
Straight edge, length 3 m (118 in)	-
Clinometer	-
Ohmmeter	-
Circuit breaker safety clips	-
Lockwire dia. 0.8 mm (0.032 in) (corrosion resistant steel)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display warning notice in the flight compartment.

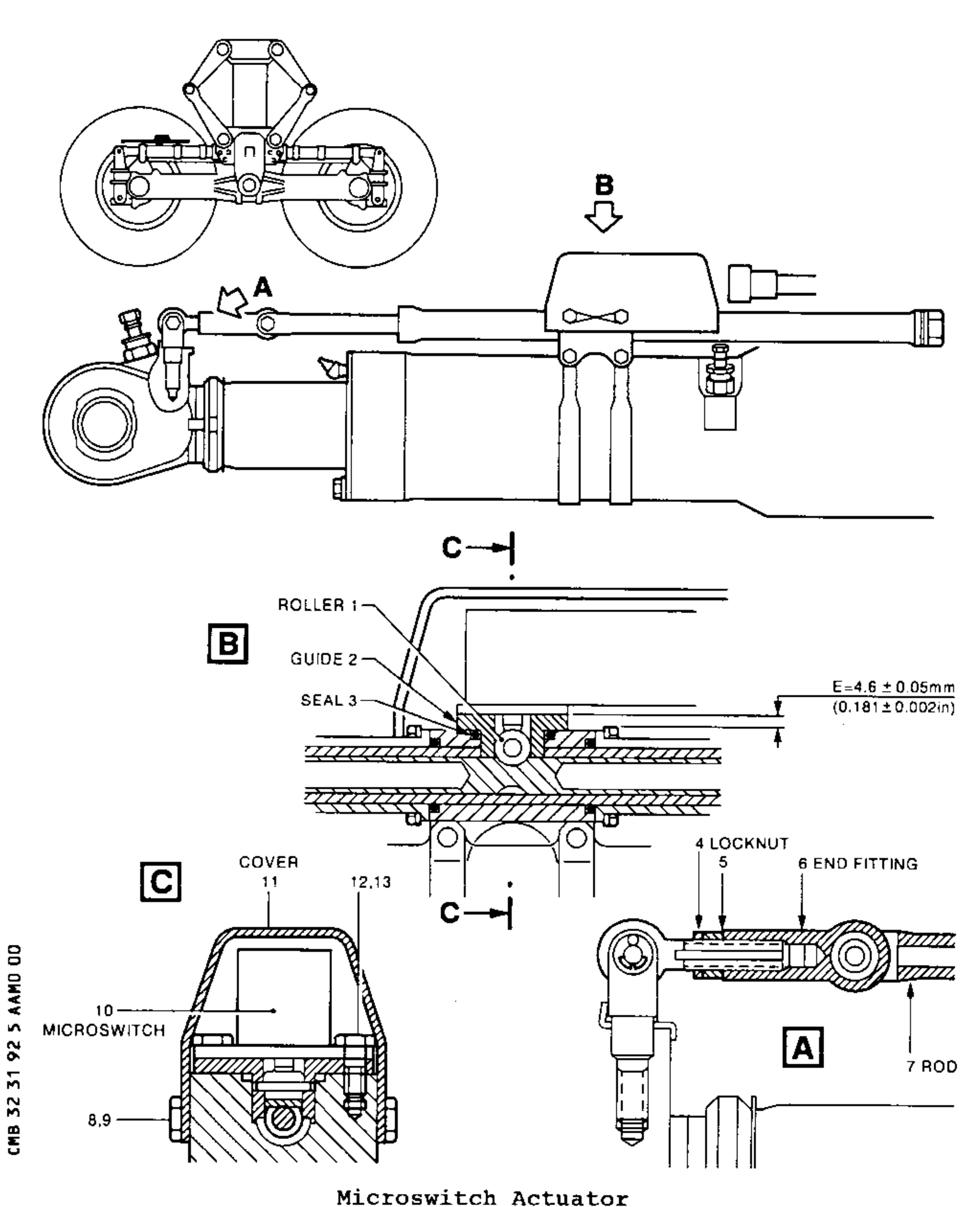
(4) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(5) Lift front (rear) main gear wheels by means of a jack under bogie beam (Ref. 12-37-00).

(6) Remove both main gear wheels on same side of bogie beam (Ref. 12-37-00).

(7) Align bogie beam perpendicular to landing gear leg using a clinometer and straight edge positioned on axles of wheels removed. Tolerance : ± 3 minutes.



RB

Microswitch Actuator
Figure 501

B Alternative Procedure - NOT TO BE USED AT MAIN BASE

B (8) Lift front (rear) main gear wheels by means of a jack under bogie beam (Ref. 12-37-00).

B (9) Align bogie beam perpendicular to the landing gear leg
B by comparing the pitch damper 'pin centre lengths' on
B both the forward and aft pitch damper. Ensure it is
B the same in both cases prior to adjusting the
B microswitch.

B (10) Raise a cat 'Q' ADD to re-check the microswitch
B adjustment with the aircraft on jacks in accordance
B with 32-11-31, Removal/Installation on return to main
B base.

C. Adjust

(1) Cut and remove lockwire and remove screws (8) securing cover (11). Retain washers (9) for reinstallation, remove cover (11).

(2) Cut and remove lockwire and remove screws (12) securing microswitch (10). Retain washers (13) for reinstallation, remove microswitch (10).

(3) Provisionally install the shortest screws (8) in the place of the removed microswitch securing screws.

NOTE: The purpose of this operation is to lower the roller guide (2) by compressing the O-ring seal (3).

(4) With the bogie beam perpendicular to the leg, check
RB using the micrometer depth gauge, that the dimension
E falls within limits : E = 4.6 ± 0.05 mm (0.181 ±
0.002 in).

NOTE: The above limits confirm that the microswitch
control roller (1) is seated in the
RB semi-circular groove on the rod (7). The
RB measurement must be taken as it is not
RB sufficiently accurate to visually check that
RB the roller is seated in the groove.

To maintain the dimension E within specified limits it is recommended not to interchange the roller guide (2) with one taken from another switch assembly.

(5) If dimension E is not within the limits:

(a) On microswitch rod adjustable end fitting (6), loosen lock nut (4) and disengage lock washer (5).

(b) Lengthen or shorten rod (7) in order to obtain dimension E : 4.6 ± 0.05 mm (0.181 ± 0.002 in).

NOTE: The position of the end fitting (6) is immaterial during rod adjustment.

(c) Attach lock washer (5) to end fitting and tighten lock nut (4). Torque to between 0.5 and 1 mdaN (45 to 88 lbf in).

NOTE: The end fitting must be kept in the same position during locking to ensure that dimension E is not altered.

(d) Secure lock nut (4) by folding two tabs of lock washer (5) onto nut and end fitting.

(6) Remove screws temporarily securing roller guide.

(7) Make certain that O-ring seal (3) is in position at base of microswitch. Install microswitch by means of two screws (12) with washers (13). Tighten and torque to between 0.1 and 0.2 mdaN (9 and 18 lbf in).

(8) Safety screws (12) with lockwire (Ref. 20-21-13).

(9) Install cover (11) and secure with 4 screws (8) and washers (9). Tighten and torque to between 0.1 and 0.2 mdaN (9 and 18 lbf in).

(10) Safety screws (8) with lockwire (Ref. 20-21-13).

D. Test

(1) Open main landing gear doors.

(a) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(b) Make certain that visor is not uplocked.

(c) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) Remove safety clips and tags and reset the circuit breakers.

(e) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(f) Open doors by operating handle located on LH main landing gear leg.

(g) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(h) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(j) Install safety collars on landing gear door actuating jacks.

(2) Trip, safety and tag the following circuit breaker:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR RAISE CONT	15-215	G 2	A 7

(3) Test RH main landing gear bogie beam aligned microswitch (G21):

NOTE: Make certain that bogie beam is aligned.

**On A/C 001-006,

(a) Disconnect plug 2G20-1A on RH main gear door actuating jack.

(b) Using an ohmmeter, check for continuity between plug terminal D and aircraft ground.

(4) Test LH main landing gear bogie beam aligned microswitch (G18):

NOTE: Make certain that bogie beam is aligned.

(a) Disconnect plug 1G20-1A on LH main gear door actuating jack.

(b) Connect plug terminal D to aircraft ground.

(c) Using an ohmmeter check for continuity between terminal B on test connector UT 1837-14 (access door 123AB, Relay box 2-123) and aircraft ground.

(5) Connect plugs previously disconnected. Make certain that they are correctly connected by checking for continuity between terminal B of test connector UT 1837-9 (access door 123AB. Relay box 2-123) and aircraft ground.

(6) Close doors.

(a) Remove door actuating jack safety collars.

(b) Remove safety clip and tag and reset circuit breaker (G2).

(c) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(d) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(e) Close doors by operating handle located on LH main landing gear leg. Install locking cap.

(f) On First officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(g) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(h) De-energize the aircraft electrical network and disconnect electrical ground power unit. (Ref. 24-41-00, Servicing).

G. Close-Up

(1) Install wheels (Ref. 12-37-00).

B (2) Lower front (rear) main gear wheels by means of a jack
B under bogie beam (Ref. 12-37-00).

(3) Remove the two jacks (07-20-0001).

MAIN GEAR WEIGHT MICROSWITCH - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.
MAKE CERTAIN THAT WHEEL CHOCKS ARE IN POSITION.

1. General

Each main landing gear leg is equipped with a microswitch mounting. Two microswitches are installed on each mounting. The mounting includes a microswitch actuator fitted with a roller. The microswitches are actuated when the shock absorber is compressed. These microswitches prevent landing gear retraction while the shock absorbers are not fully extended. They also control the operation of a series of relays. These relays transmit the aircraft configuration, Flight or Ground, to the different aircraft systems associated with the landing gear. Removal of the microswitch mounting serves to gain access to the inner shortening rod/main shock absorber link pin.

2. Microswitch Mounting

A. Equipment and Materials

DESCRIPTION	PART NO.
R Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Access Platform 2.700 m (8 ft. 9 in.)	
Depth Gauge	
Lockwire, Corrosion Resistant Steel Dia. 0.80 mm (0.032 in.)	
R Special Materials (Ref. 20-30-00, R No. 119).	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	LH UC WEIGHT SW 'A' SYS SUP	1-213	G 292	M17
R	RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP		G 295	M18
R	LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
R	LH UC WEIGHT SW 'B' SYS SUP		G 294	B 9
	UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
	UC SELECTOR RAISE CONT		G 2	A 7
	UC LOWER DOORS OPEN SUP		G 3	A 8
	UC SELECTOR LOWER CONT		G 4	A 9

(4) Install access platform.

C. Remove

(1) Disconnect microswitch electrical connectors (5).

LH gear leg : G322A and G323A
RH gear leg : G324A and G325B.

(2) Cut and remove lockwire, remove attaching screws (8) ; retain washers (9) for reinstallation.

(3) Remove microswitch mounting (10) and retain spacer (2) for reinstallation.

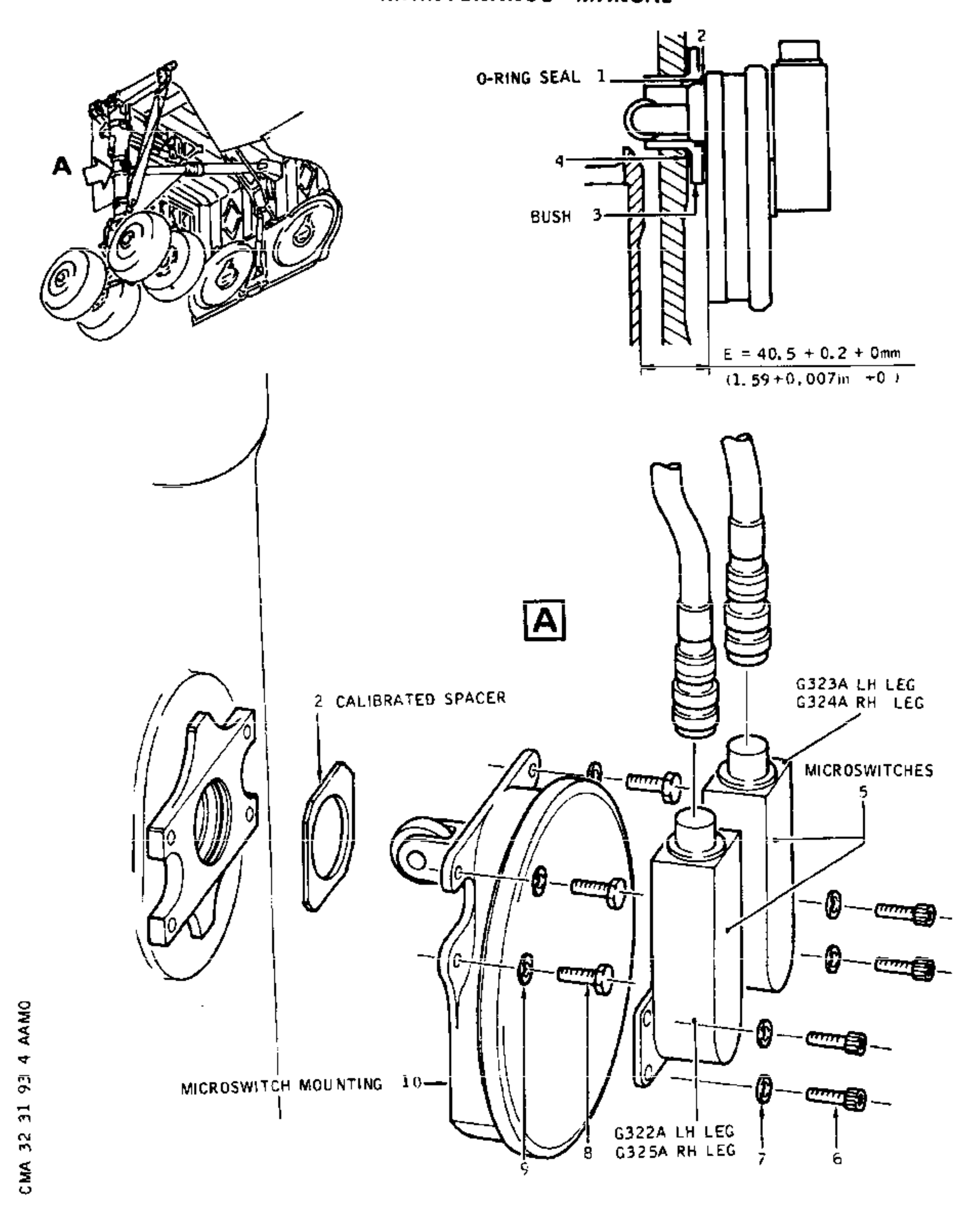
WARNING : THE CALIBRATED SPACER IS MATCHED WITH THE LANDING GEAR LEG, AND NOT WITH THE MICRO-
R SWITCH MOUNTING ASSEMBLY.

D. Preparation of Replacement Component

(1) Make certain that microswitch mounting operates correctly by depressing then releasing roller.

(2) Shoulder bush (3) together with washer (4) must remain in position on landing gear leg.

NOTE : In the event that shoulder bush (3) or washer (4) are replaced adjustment must be made.



R

Microswitch Mounting
Figure 401

Adjustment consists of correctly positioning the microswitch mounting (10) with respect to the shock absorber sliding rod.
With the calibrated spacer (2) in position, check, by means of a depth gauge, that dimension E = 40.5 + 0 (E = 1.59 + 0
R + 0.2 mm + 0.007 in.).
It may be necessary to grind a new spacer (2).

R (3) If a new microswitch is to be installed, prepare as
R follows :

R - Apply Product No. 119 to the annular volume around
R plunger.
R - Install grease retaining membrane (supplied in a
R special bag with the microswitch).

E. Install

(1) Check O-ring seal (1) installed in shoulder bush (3) bore, for correct condition. Install a new seal if necessary.

(2) Position microswitch mounting (10) fitted with spacer (2).

(3) Install screws (8) together with washers (9).

(4) Torque screws (8) to 0.2 m.daN (18 lbf.in.).

R (5) Wirelock screws in pairs (Ref. 20-21-13).

(6) Connect microswitch electrical connectors.

(7) Remove safety clips and tags and reset the circuit breakers.

F. Test

R (1) Connect electrical ground power unit and energize the
R aircraft electrical network (Ref. 24-41-00, Servicing).

R (2) In zone 123 (access door 123AB), make certain that
there is 28 VDC between UT test connector terminals
R of relay boxes 2-123 and 3-123.

MICROSWITCH	RELAY	UT CONNECTOR	TERMINALS
G 322	G 301	1837-3	A-D
	G 302	1837-3	A-B

MICROSWITCH	RELAY	UT CONNECTOR	TERMINALS
G 323	G 306	1837-2	C-D
	G 307	1837-2	C-B
G 324	G 311	1838-11	A-B
	G 312	1838-11	A-D
G 325	G 316	1838-13	A-B
	G 317	1838-13	A-D

R (3) De-energize the aircraft electrical network and dis-
R connect electrical ground power unit (Ref. 24-41-00,
R Servicing).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove access platform.

3. Replace Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Access Platform 2.700 m (8 ft. 9 in.)	
Lockwire - Corrosion Resistant Steel Dia. 0.80 mm (0.032 in.)	
Electrical Ground Power Unit	
R Special Materials (Ref. 20-30-00, R No.119)	

B. Prepare

(1) On First Officer's instrument panel, take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform.

C. Remove

(1) Disconnect microswitch electrical connector.

(2) Cut lockwire and remove microswitch attaching screws (6). Retain washers (7) for reinstallation.

(3) Remove microswitch.

D. Preparation of Replacement Component

If a new microswitch is to be installed, prepare as follows :

- Apply Product No. 119 to the annular volume around plunger
- Install grease retaining membrane (supplied in a special bag with the microswitch).

E. Install

(1) Position microswitch.

(2) Install screws (6) together with washers (7).

(3) Torque tighten screws to between 0.1 and 0.2 m.daN (9 to 18 lbf.in.).

(4) Safety screws in pairs using lockwire (Ref. 20-21-13).

(5) Connect microswitch electrical supply connector.

(6) Remove safety clips and tags and reset the circuit breakers.

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) In zone 123 (access door 123AB) make certain that there is 28 VDC between UT test connector terminals of relay boxes 2-123 and 3-123.

MICROSWITCH	RELAY	UT CONNECTOR	TERMINALS
G 322	G 301	1837-3	A-D
	G 302	1837-3	A-B
G 323	G 306	1837-2	C-D
	G 307	1837-2	C-B
G 324	G 311	1838-11	A-B
	G 312	1838-11	A-D
G 325	G 316	1838-13	A-B
	G 317	1838-13	A-D

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing)

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove access platform.

NOSE WHEEL CENTRED MICROSWITCH - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The microswitch is located at the rear of the nose landing gear leg.
No adjustment is necessary after removal of the microswitch.
Removal of the microswitch is necessary to check adjustment of its mechanical actuator.

2. Nose Gear Centred Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Graduated Quadrant - Nose Landing Gear	D924330000
Jack - Shock Absorber Compression	1761/1
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000

DESCRIPTION	PART NO.

**ON A/C ALL

Snap Wire 0.50 mm (0.020 in.)

Special Materials (Ref. 20-30-00, No.119).

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Display warning notice in flight compartment prohibiting operation of landing gear Normal control lever.

(4) Position quadrant D924330000.

(5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

C. Remove

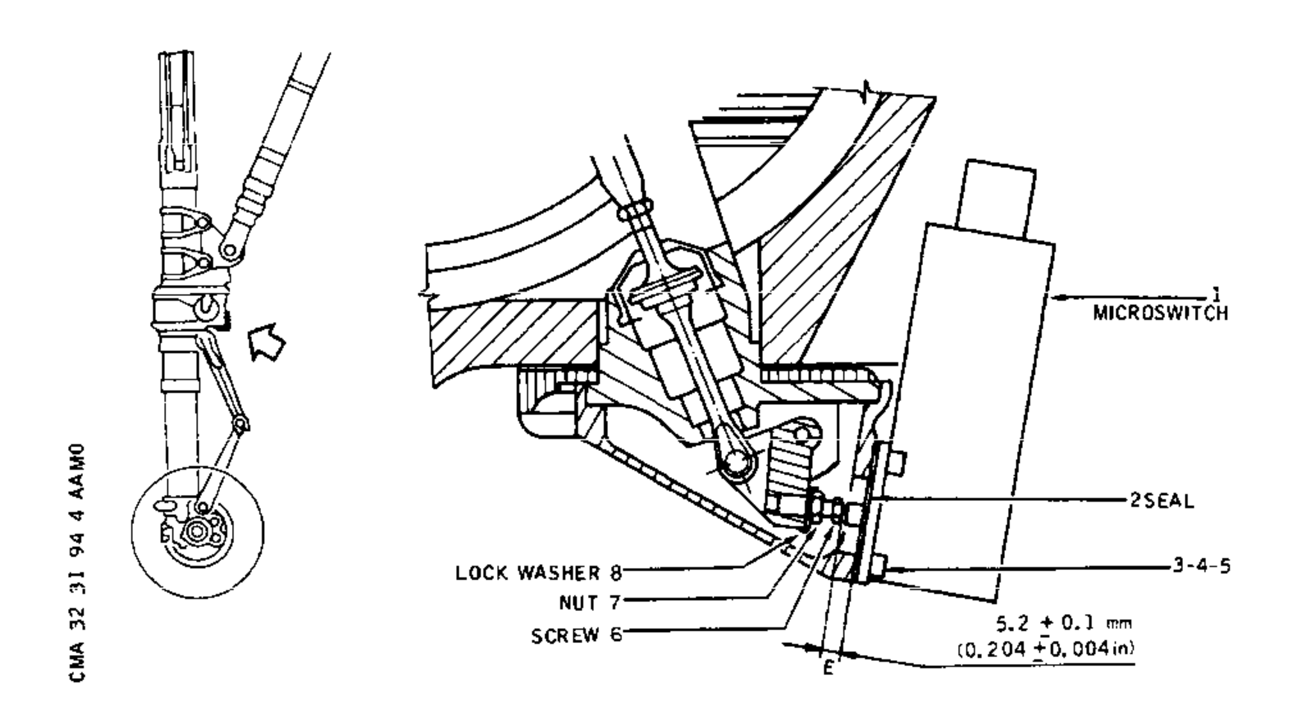
(1) Disconnect microswitch plug (1).

(2) Remove cotter pin and remove nuts (5). Retain washers (4) and screws (3).

(3) Remove microswitch (1).

(4) Retain seal (2) for reinstallation.

D. Preparation of Replacement Component



Nose Wheel Centred Microswitch
Figure 401

(1) Using jack No. 1761/1, lift nose gear wheels clear of ground.

(2) Using quadrant D924330000, centre nose gear wheels.

(3) Check that dimension E is 5.2 ± 0.1 mm (0.204 ± 0.004 in.).

If dimension E is not within these limits :

- Fold back tab of lock washer (8) and loosen lock-nut (7).
- Turn screw (6) as required to achieve dimension E.
- Tighten locknut (7) and safety with lock washer (8).

(4) If a new microswitch is to be installed, prepare as follows :

- Apply Product No. 119 to the annular volume around plunger.

- Install grease retaining membrane (supplied in a

special bag with microswitch).

E. Install

(1) Install microswitch (1) with seal (2).

(2) Insert screws (3) with head facing microswitch (1).

(3) Install washers (4), nuts (5) and safety with cotter pins.

(4) Connect microswitch plug.

F. Test

(1) Open nose landing gear doors.

(a) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(b) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(c) Remove safety clips and tags and reset circuit breakers.

(d) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(e) Remove locking cap and open gear doors by operating handle located on nose landing gear leg.

(f) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(g) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(h) Install safety collars on landing gear door actuating jacks.

WARNING : MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED AND THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(2) On First Officer's instrument panel, on landing gear

Normal control lever, break snap wire, press O/RIDE PRESS button, and place lever in UP position.

(3) Make certain that nose gear wheels are centred.

(4) On test connector UT 1837.14, check that voltage between terminal A and aircraft ground is 28 VDC. (Door 123AB, relay box 2-123).

(5) Turn nose gear wheels to right then left. Check that 28 VDC is cut off for a turn of between 2°12' and 5°.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Reset O/RIDE and safety with snap wire, 0.50 mm (0.020 in.). (Ref. 20-26-13).

(8) Lower nose gear wheels and remove jack 1761/1.

(9) Close landing gear doors.

(a) Remove safety collars from landing gear door actuating jacks.

(b) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(c) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(d) Close gear doors by operating handle located on nose landing gear leg.
Install locking cap.

(e) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(f) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(g) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

G. Close-Up

(1) Remove quadrant D924330000.

(2) Remove warning notice from flight compartment.

NOSE GEAR DOOR OPENING LIMIT SWITCH - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The limit switches associated with landing gear Normal operation are mounted in the nose landing gear bay at the main door forward hinge fittings.

2. Nose Gear Door Opening Limit Switch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Circuit Breaker Safety Clips	
Access Platform 3.22 m (10 ft. 7 in.)	
Special Materials (Ref. 20-30-00, No 119)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

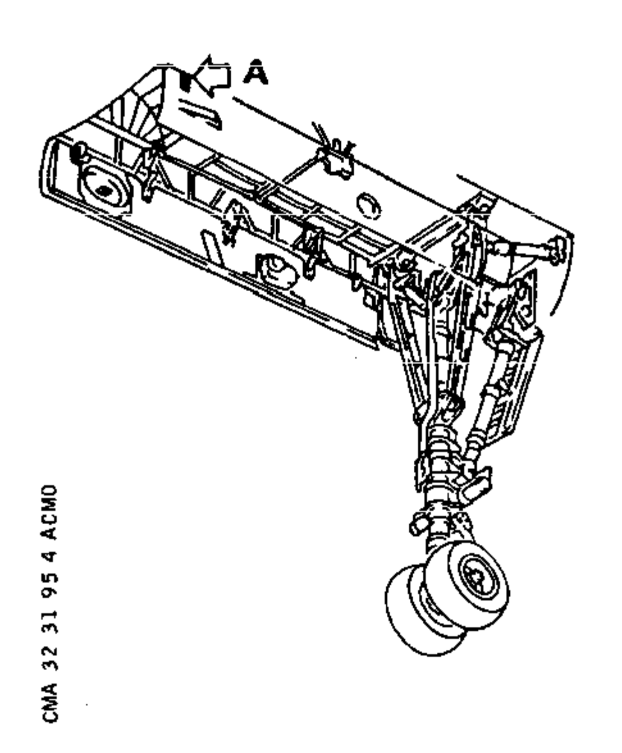
(10) Trip, safety and tag the following circuit breakers :

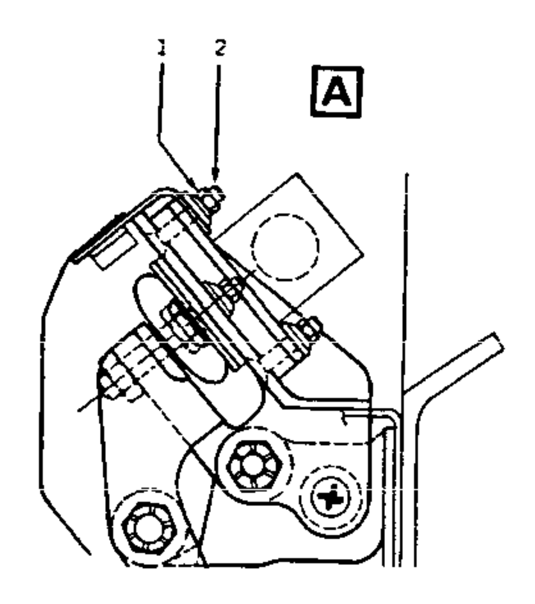
SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in flight compartment.

(12) Install safety collars on landing gear door actuating jacks.

C. Remove (Ref. Fig. 401)





Limit Switches
Figure 401

(1) Remove cover from limit switch control mechanism.

(2) Disconnect and cap electrical connector.

(3) Remove nuts (1), retain screws (2) for reinstallation. Remove limit switch.

D. Preparation of Replacement Component

If a new switch is to be installed, prepare as follows :

- Apply Product No. 119 to the annular volume around plunger.
- Install grease retaining membrane (supplied in a special bag with switch).

E. Install

(1) Position limit switch and install using screws (2)

and nuts (1).

(2) Connect limit switch electrical connector.

(3) Install cover on limit switch control mechanism.

(4) Remove safety clips and tags and reset circuit breakers

F. Test

Carry out a test to check that limit switch is correctly connected (Ref. 32-31-95, Adjustment/Test).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove safety collars from landing gear door actuating jacks.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) Close gear doors by operating handle located on nose landing gear leg.
Install locking cap.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(9) Close access doors.

(10) Remove warning notice from flight compartment.

NOSE GEAR DOOR OPENING LIMIT SWITCH - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITION OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two limit switches, associated with Normal landing gear operation, are installed in the nose gear bay, adjacent to the main door front hinges.
Each limit switch is operated by a mechanical actuator mounted on the main door front hinge.
The limit switch actuators being identical, a single adjustment procedure only is described in this topic.

2. Nose Gear Door Opening Limit Switch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

DESCRIPTION	PART NO.
Safety Sleeve, Nose Landing Gear Doors	E925002000
Safety Collars - Main Landing Gear Door Actuating Cylinder	D921317000
Circuit Breaker Safety Clips	
Access Platform 3.220 m (10 ft. 7 in.)	
Voltmeter	
Lockwire Dia. 0.028 in.(0.7 mm) (Corrosion Resistant Steel)	
Snap Wire 0.20 in. (0.5 mm)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

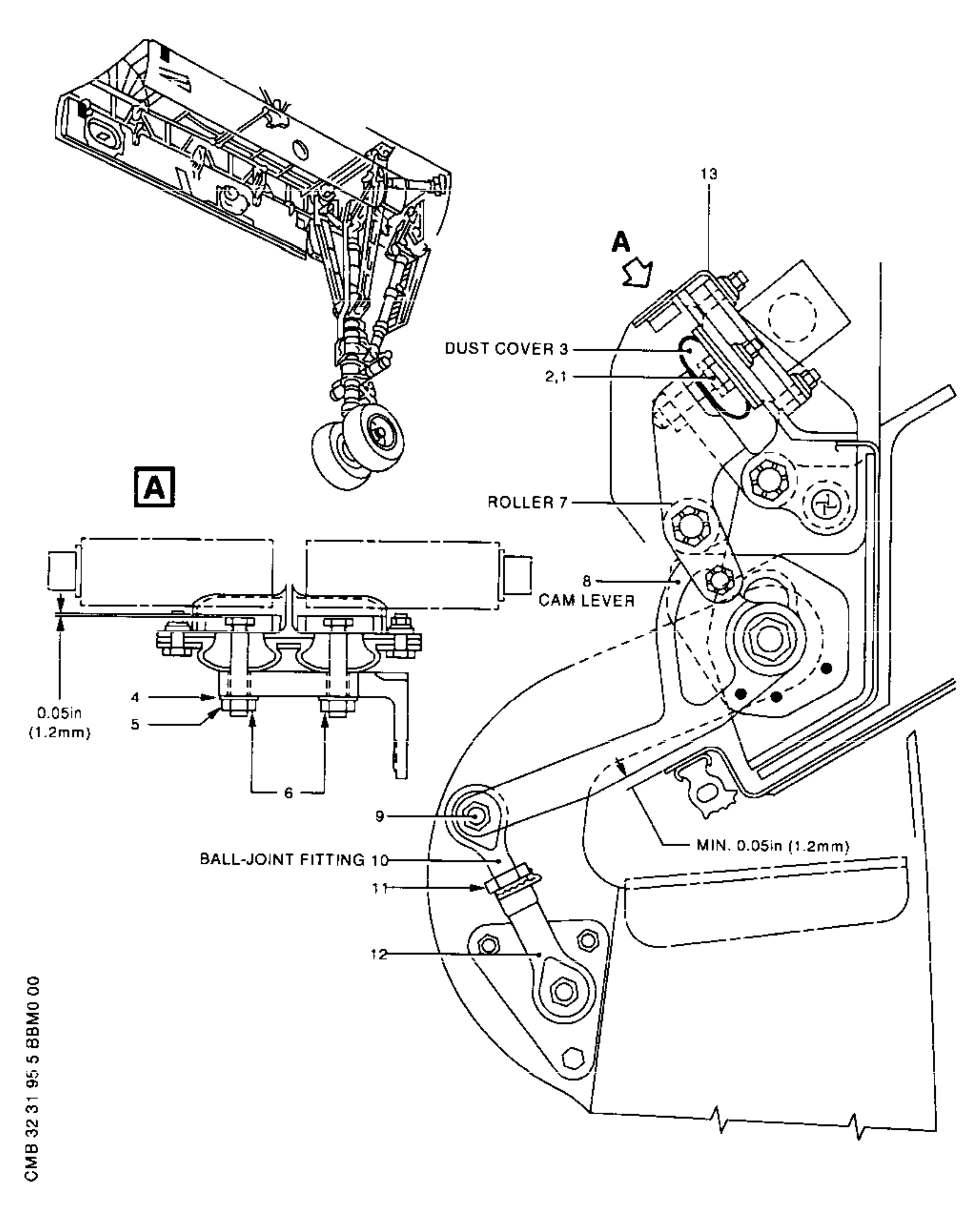
(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal Control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on nose landing gear leg.



R

Nose Gear Door Opening Limit Switches
Figure 501

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in flight compartment.

R (12) Install safety sleeves.

C. Adjust

R (1) Remove limit switch actuator assembly cover (13).

(2) Remove nuts (2), remove screws (1) and dust cover (3).

(3) Cut and remove lockwire and loosen nuts (5) and (11).

(4) Remove hinge pin (9) together with nut and washers.

(5) Maintain door in fully open position against stops.

NOTE: The door must be opened to an angle of 67 degrees.

(6) Position cam (8) with door fully opened so that roller (7) is seated in associated cam lobe recess.

(7) Shorten or lengthen ball-joint fitting on connecting rod (12) so that the fitting can be coupled to cam (8) lever.

(a) Install hinge pin (9) with washers and nuts.

NOTE: Make certain that a thickness washer is installed between cam lever (8) and ball-joint fitting on connecting rod (12).

(b) Tighten nut and safety hinge pin (9) with cotter pin.

(c) Tighten locknut (11) on connecting rod (12) and safety with lockwire (Ref. 20-21-13).

(8) Make certain that the door is fully opened, and that roller (7) is in contact with cam (8).

(9) Check that clearance between lower face of cam (8) and aircraft structure is 0.05 in (1.2 mm) min.

(10) Adjust screws (6) to obtain a clearance of 0.03 in (1.2 mm).

(11) Make certain that lock plate (4) is installed.

(12) Tighten nut (5) while holding head of screw (6). Torque to between 50 and 60 lbf in (0.6 and 0.7 mdaN).

(13) Check that clearance has not been altered.

(14) Safety nut (5) with lockwire (Ref. 20-21-13).

(15) Install dust cover (3) and secure with screws (1) and nuts (2).

R (16) Install limit switch actuator assembly cover (13).

D. Test

WARNING: MAKE CERTAIN THAT THE GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

R (1) Remove safety sleeve from corresponding door actuating jack.

(2) Remove safety clips and tags and reset circuit breakers.

(3) Make certain that the aircraft electrical network is energized.

(4) Open access door 123AB.

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

RB (6) Make certain that all landing gear doors are fully open.

(7) On panel 2-213, check that there is 28 Volts between connector UT 1837-9 terminal A and ground terminal B.

(8) Slowly close door associated with limit switch actuator previously adjusted. Check for zero voltage at beginning of closing phase.

(9) Fully open door.

(10) Make certain that nose gear wheels are centred.

WARNING: MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(11) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(12) On panel 2-123, check that there is 28 Volts between connector UT 1837-14 terminal A and ground terminal B.

(13) Slowly close door associated with limit switch actuator previously adjusted. Check for zero voltage at beginning of closing phase.

(14) Fully open door.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Restore O/RIDE to initial position and safety with snap wire 0.020 in (0.5 mm) (Ref. 20-26-13).

B E. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(2) Remove safety collars.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(4) On First Officer's instrument panel, place landing

gear Normal control lever in DOWN position.

(5) Close doors by operating lever located on nose landing gear leg. Install locking cap.

(6) On First Officer's instrument panel, place landing gear normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(9) Close access doors.

(10) Remove warning notice from flight compartment.

NOSE GEAR DOOR OPENING LIMIT SWITCH - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Four limit switches are installed in the nose gear bay adjacent to the main door front hinges.
Limit switches (G15) and (G16) are associated with Normal landing gear operation.
Limit switches (G82) and (G83) are associated with the landing gear retraction FAULT ANNUNCIATOR.
A mechanical actuator integral with the front hinge on each main door operates two limit switches mounted on a bracket. Since each limit switch actuator is identical a single adjustment procedure only is described in this topic.

2. Nose Gear Door Opening Limit Switches

A. Equipment and Materials

DESCRIPTION	PART NO
Electrical Ground Power Unit	
Safety Sleeve - Nose Undercarriage Doors	E925002000
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO
Access Platform 3.220 m (10 ft. 7 in.)	
Voltmeter	
Lockwire Dia. 0.028 in. (0.70 mm) (Corrosion Resistant Steel)	
Snap Wire 0.020 in. (0.5 mm)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

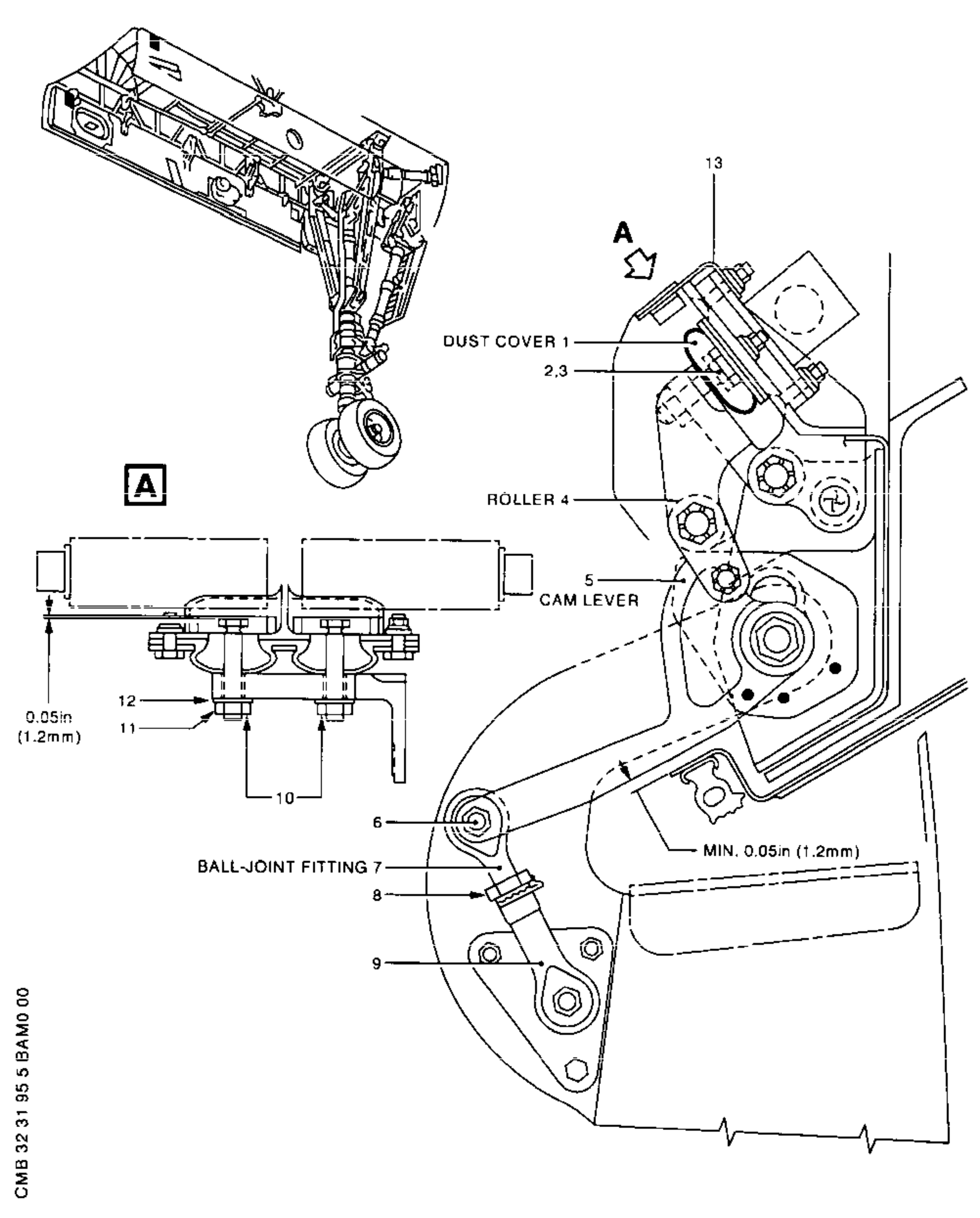
(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating control handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :



R Nose Gear Door Opening Limit Switches
Figure 501

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in flight compartment.

(12) Install safety sleeves.

C. Adjust

(1) Remove limit switch actuator assembly cover and anchor nut plate (13).

(2) Remove nuts (3) screws (2) and dust cover (1).

(3) Cut and remove lockwire and loosen nuts (8) and (11).

(4) Remove hinge pin (6) together with nut and washers.

(5) Maintain door fully open against stop.

NOTE : The door must be opened to an angle of 67^{o}.

(6) Position cam (5) with door fully opened so that roller (4) is seated in associated cam lobe.

(7) Shorten or lengthen ball-joint fitting (7) on connecting rod (9) so that the fitting can be coupled to cam (5) lever.

(a) Install hinge pin (6) together with washers and nut.

NOTE : Make certain that a thickness washer is installed between cam lever (5) and ball-joint fitting (7) on connecting rod.

(b) Tighten nut and safety hinge pin (6) with cotter pin.

(c) Tighten locknut (8) on connecting rod (9) and safety with lockwire.

(8) Make certain that the door is fully opened, and that roller (4) is in contact with cam (5).

(9) Make certain that there is a clearance of 0.05 in (1.2 mm) minimum between lower face of cam (5) and the aircraft structure.

(10) Adjust screw (10) to obtain a clearance of 0.05 in (1.2 mm) between screw head and microswitch plunger.

(11) Make certain that lock plate (12) is installed.

(12) Tighten nuts (11) while holding head of screws (10). Torque to between 50 and 60 lbf in (0.6 and 0.7 mdaN).

(13) Check that clearance has not been altered.

(14) Safety nuts (11) with lockwire (Ref. 20-21-13).

(15) Install dust cover (1) and attach with screws (2) and nuts (3).

D. Test of Limit Switches (G15, G16)

WARNING: MAKE CERTAIN THAT THE GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED.
MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(1) Remove safety sleeves.

(2) Remove safety clips and tags and reset circuit breakers.

(3) Make certain that the aircraft electrical network is energized.

(4) Open access door 123 AB.

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

RB (6) Make certain that all landing gear doors are fully open.

(7) On panel 2-213, check that there is 28 Volts between connector UT 1837-9 terminal A and ground terminal B.

(8) Slowly close door associated with limit switch actuator previously adjusted. Check for zero voltage at beginning of closing phase.

(9) Fully open door.

(10) Make certain that nose gear wheels are centred.

WARNING: MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED.
MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(11) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(12) On panel 2-213 check that there is 28 Volts between connector UT 1837-14 terminal A and ground terminal B.

(13) Slowly close door associated with limit switch actuator previously adjusted.
Check for zero voltage at beginning of closing phase.

(14) Fully open door.

(15) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(16) Restore O/RIDE to initial condition and safety with snap wire 0.020 in (0.5 mm) (Ref. 20-26-13).

E. Test of Limit Switches (G82, G83)

WARNING: MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED.
MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(1) Remove safety sleeves.

(2) Remove safety clips and tags and reset circuit breakers.

(3) Make certain that the aircraft electrical network is energized.

(4) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(5) Make certain that doors are fully opened.

(a) On Flight Engineer's panel, NOSE DOORS LH/RH indicator lights on FAULT ANNUNCIATOR unit are extinguished.

(b) Slowly open and close door associated with limit switch actuator previously adjusted.

On Flight Engineer's panel, associated NOSE DOORS indicator light must illuminate.

(6) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(4) Close doors by operating control handle located on nose gear leg. Install locking cap.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(8) Close access doors.

(9) Remove warning notice from flight compartment.

NOSE GEAR WEIGHT MICROSWITCH - REMOVAL/INSTALLATION

WARNING : MAKE THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A microswitch is fitted to each end of the upper arm of the nose landing gear torque link. Each microswitch is operated by a mechanical actuator secured to each end of the torque link upper arm hinge pin.

As the actuator of each microswitch is identical this topic describes a single adjustment procedure only.

Adjustment of the actuator can only be carried out with microswitch removed.

RB No adjustment is necessary after replacement of the microswitch,
RB but an electrical Continuity check is required to confirm system
RB integrity.

No adjustment is necessary after replacement of the microswitch.

2. Remove Microswitch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire - Dia. 0.8 mm (0.032 in.) Corrosion Resistant Steel	
R Special Materials (Ref. 20-30-00, R No.119)	

	DESCRIPTION	PART NO.
R B R B	Jack with Lifting capability greater than 81600 daN (183621 lbf)	07-10-001
R B	Jack pad-nose	D 920 11 3200
R B	Auxiliary Jack	GEES 0948

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display a warning notice in flight compartment prohibiting use of landing gear Normal control lever.

(4) Trip, safety and tag the following circuit breakers.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
NOSE U/C W/SW "B" SYS SUP	3-213	G 296	D 8

C. Remove

(1) Remove attach screws (1), washers (2) and cover (7).

(2) Disconnect and cap electrical connector.

(3) Cut lockwire and remove screws (3), retain washers (4).

(4) Remove microswitch (6) and retain seal (5).

D. Preparation of Replacement Component

If a new microswitch is to be installed, prepare as follows :
- Apply product No.119 to annular volume around plunger
- Install grease retaining membrane (supplied in special bag with microswitch).

E. Install

(1) Position microswitch (6) and seal (5).

(2) Install screws (3) and washers (4).

(3) Tighten screws (3) and wirelock in pairs (Ref. 20-21-13).

F. TEST

R B (1) Obtain forward balance of the aircraft by filling fuel tanks No. 9 and No. 10, and ensure that all other tanks are empty (ref. 28-23-00). Leave inlet valve main switches (4 off) in SHUT position. Check JETTISON MASTER VALVE switches (2 of ganged) are in SHUT position.

R B (2) Install jack pads at FRAME 28, and position auriliary jacks at RIB 27, SPAR 72. Select brake control lever to PARK and chock main wheels.

R B (3) Position two jacks at nose position (FRAME 28)

R B (4) Raise nose of aircraft using both jacks simultaneously ensuring that all equipment and personnel are clear of aircraft structure as aircraft is raised and rotates about main landing gear. Maintain a clearance between auxiliary jacks and aircraft structure sufficient to halt over rotation if ti should occur for any reason. Continue raising nose until shock absorber is fully extended and a clearance is obtained of approximately 0.5 inch between nose wheels and ground.

R B (5) On microswitch concerned check that there is continuity between connector terminals A and B.

R B (6) Slowly lower aircraft nose to compress shock absorber. On microswitch concerned check that continuity is established between microswitch connector terminals A and C for shock absorber compression of

R B $15\text{ mm}\ ^{+15\text{ mm}}_{-0\text{ mm}}$ $\left(0.590\text{ in.}\ ^{+0.590}_{-0.000}\right)$

R B (7) Lower aircraft off jacks and remove all equipment used.

R B (8) Connect microswitch connectors.
R B Install cover (7) using screws (1) and washers (2).

R B (9) Remove safety clips and tags and reset circuit breakers.

R B (10) Connect electrical ground power unit and energize the
R B aircraft electrical network (Ref. 24-41-00, Servicing).

R B (11) Microswitch G320 test.

R B Make certain that there is 28 VDC between test connector
R B UT1838-12 (Door 123AB, relay box 3-123) terminals A and
R B B.

R B (12) Microswitch G321 test

R B Make certain that there is 28 VDC between test connector
R B UT1837-4 (Door 124AB, relay box 2-123) terminals A and B.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Remove warning notice.

3. Adjust Microswitch Actuator

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack with Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Circuit Breaker Safety Clips	
Jack - Shock Absorber Compression	1761/1
Lockwire - Dia. 0.8 mm (0.032 in.) Corrosion Resistant Steel	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Display warning notice in flight compartment prohibiting use of landing gear Normal control lever.

(4) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP. REF.
NOSE UC WEIGHT SW A SYS SUP	1-213	G 291	M16
NOSE U/C W/SW 'B' SYS SUP	3-213	G 2996	D 8

(5) Jack up aircraft (Ref. 07-11-00).

(6) Install safety stay.

(7) Depressurize shock absorber LP chamber (Ref. 32-21-24, Servicing).

(8) Remove cover (7) by removing attaching screws (1). Retain washers (2) for reinstallation.

(9) Remove microswitch (6) (Ref. paragraph 2).

After SB 32-038 For A/C 001-005,

R C. Adjust (Ref. Fig. 401)

(1) Loosen lock screw (8)

R (2) Adjust screw (9) to obtain a clearance of dimension
R A = 1.5 ± 0.1 mm (0.059 ± 0.004 in).

(3) Tighten lock screw (8).

(4) Position jack 1761/1 below nose landing gear and compress shock absorber to a maximum of 50 mm (1.968 in).

R (5) Check that dimension B is equal to or greater than 5 mm (0.196 in.).

(6) Install microswitch (6) (Ref. paragraph 2).

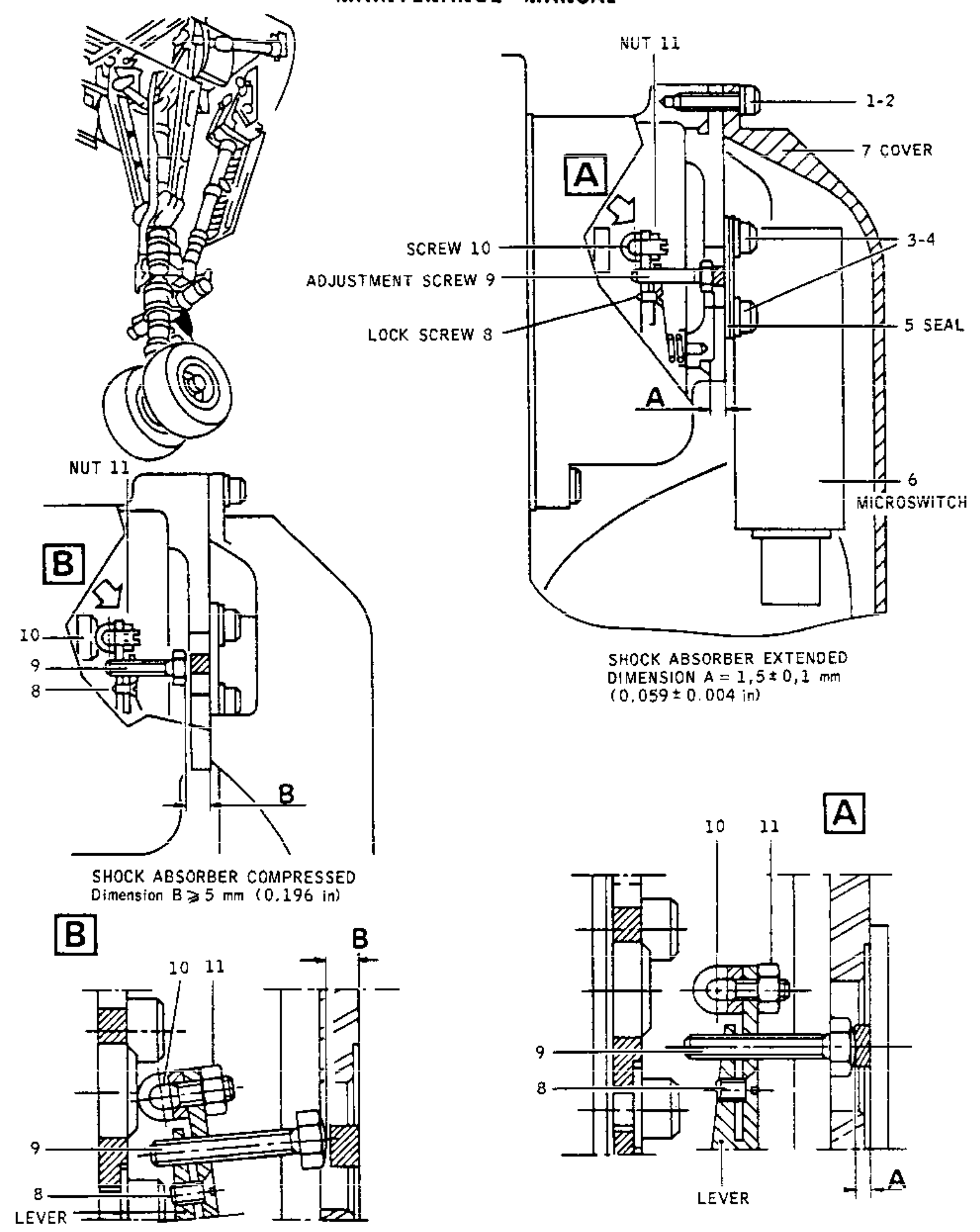
* * ON A/C 001-005

C. Adjust
R (Ref. Fig. 402)

(1) Loosen lock screw (8)

R (2) Adjust screw (9) to obtain a clearance of dimension
R A = 1.9 ± 00.1 mm (0.075 ± 0.004 in.).

R (3) Tighten lock screw (8).



Nose Gear Weight Microswitch
Figure 401

R

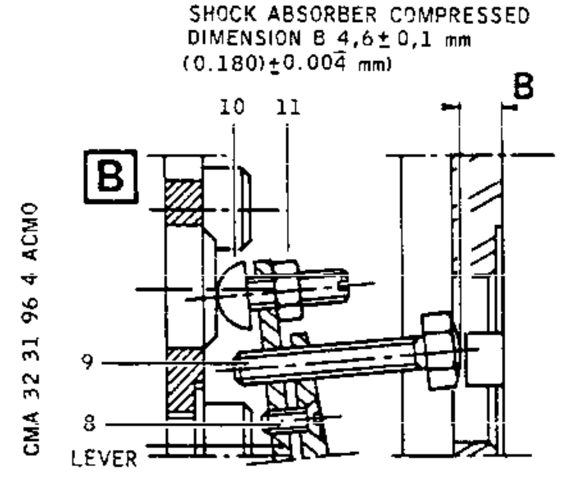
AFTER SB 32-038

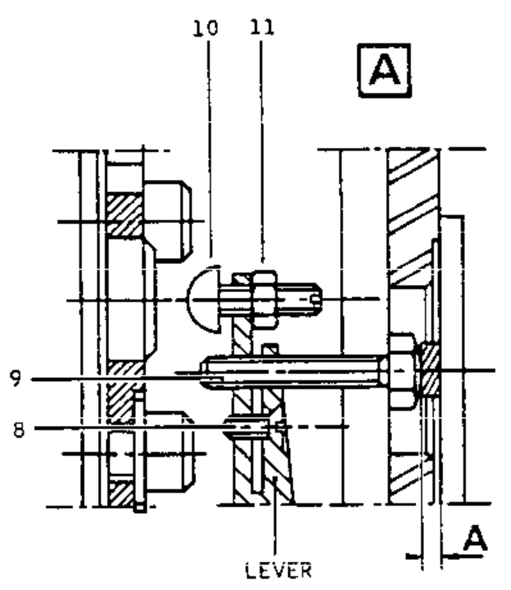
NUT 11
1-2
7 COVER
A
SCREW 10
ADJUSTMENT SCREW 9
3-4
5 SEAL
LOCK SCREW 8
A
6 MICROSWITCH

SHOCK ABSORBER EXTENDED
Dimension A = 1.9 ± 0.1 mm (0.075 ± 0.004 in)

11
B
10
9
8
B

SHOCK ABSORBER COMPRESSED
DIMENSION B 4,6 ± 0,1 mm
(0.180) ± 0.004 mm)





CMA 32 31 96 4 ACMO

Nose Gear Weight Microswitch
Figure 402

R
BEFORE SB 32-038

(4) Position jack 1761/1 under nose gear and compress shock absorber to a maximum of 50 mm (1.968 in.).

(5) Slightly loosen nut (11) and adjust screw (10) to obtain the dimension B equal to or greater than
R 4.6 ± 0.1 mm (0.180 ± 0.084 in).

(6) Block screw and tighten nut (11).

(7) Install microswitch (6) (Ref. paragraph 2)..

D. Test

(1) Disconnect electrical connectors G320A and G321A.

(2) Make certain that shock absorber is extended.

(3) On microswitch concerned, check that there is continuity between connector terminals A and B.

(4) Using jack 1761/1 compress shock absorber at least 30 mm (1.181 in.).

(5) On microswitch concerned, check that there is continuity between connector terminals A and C.

(6) Extend shock absorber, then compress slowly. Check that continuity is established between microswitch connector terminals A and C for shock absorber compression of 15 (+ 15, - 0) mm (0.590 (+ 0.590, - 0) in.).

(7) Connect microswitch connectors.

Check that connectors G320 and G321 are correctly connected by carrying out test described in paragraph 2.

E. Close-Up

(1) Install cover (7) by means of screw (1) with their washers (2).

Charge shock absorber LP chamber (Ref. 32-21-24, Servicing).

Remove safety stay.

Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

Lower aircraft onto its wheels.

(6) Remove warning notice from flight compartment.

(7) Remove safety clips and tags and reset circuit breakers.

Printed in England

EMERGENCY EXTENSION - DESCRIPTION AND OPERATION

1. General

R The power required for emergency landing gear extension is provided by the Yellow hydraulic system.

Return and depressurization selector valves automatically cut off pressure in the Normal system when Yellow system is selected.

R The Emergency extension control is purely mechanical. Gear extension is controlled through a three-position lever. In Emergency mode main doors do not close.
The Yellow system only extends the three landing gears together with the tail gear.

A safety device incorporated in the cable tensioner at FR25 automatically locks the selector valve in the event of breakage of one of the two associated cables.

This device prevents inadvertent operation of landing gears and doors in flight.

2. Description (Ref. Fig.001 and 002)

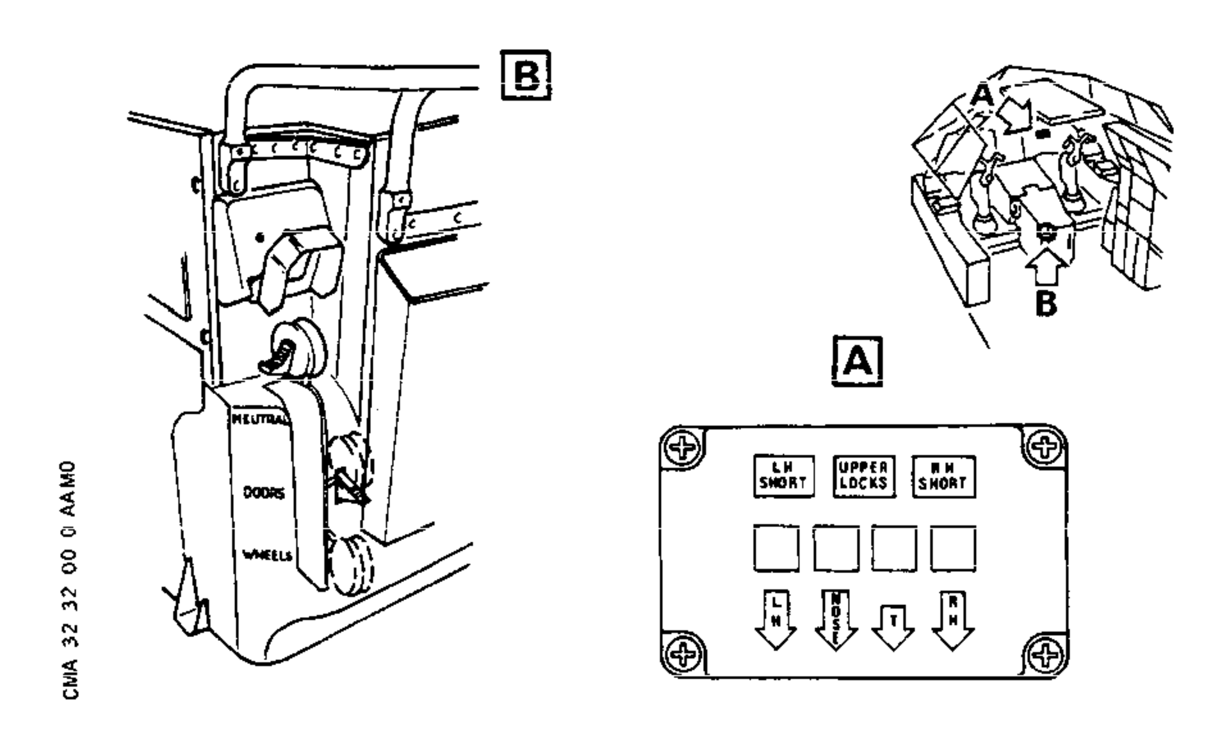
A. Emergency Extension Control

(1) Emergency extension is controlled through a lever located on the left hand side of the centre console. A wirelocked lead sealed cover enables the control lever to be freed from NEUTRAL position.

R A stop at both NEUTRAL and WHEELS position can be overriden by means of a spring loaded catch on the control lever.

In the intermediate DOORS position lever travel is limited by a spring loaded latch coming against a stop.

The control lever can only be moved to WHEELS position after manual override of the stop.
The three control lever positions are : NEUTRAL, DOORS, WHEELS.



Emergency Extension - Controls and Indicating
R Figure 001

R (2) This lever controls, through rods, cables, pulleys bellcranks and regulator, the emergency selector valve (4312) installed in nose gear bay between FR25 and FR26 Control of this selector valve is such that the return and depressurization valves are operated before the doors open.

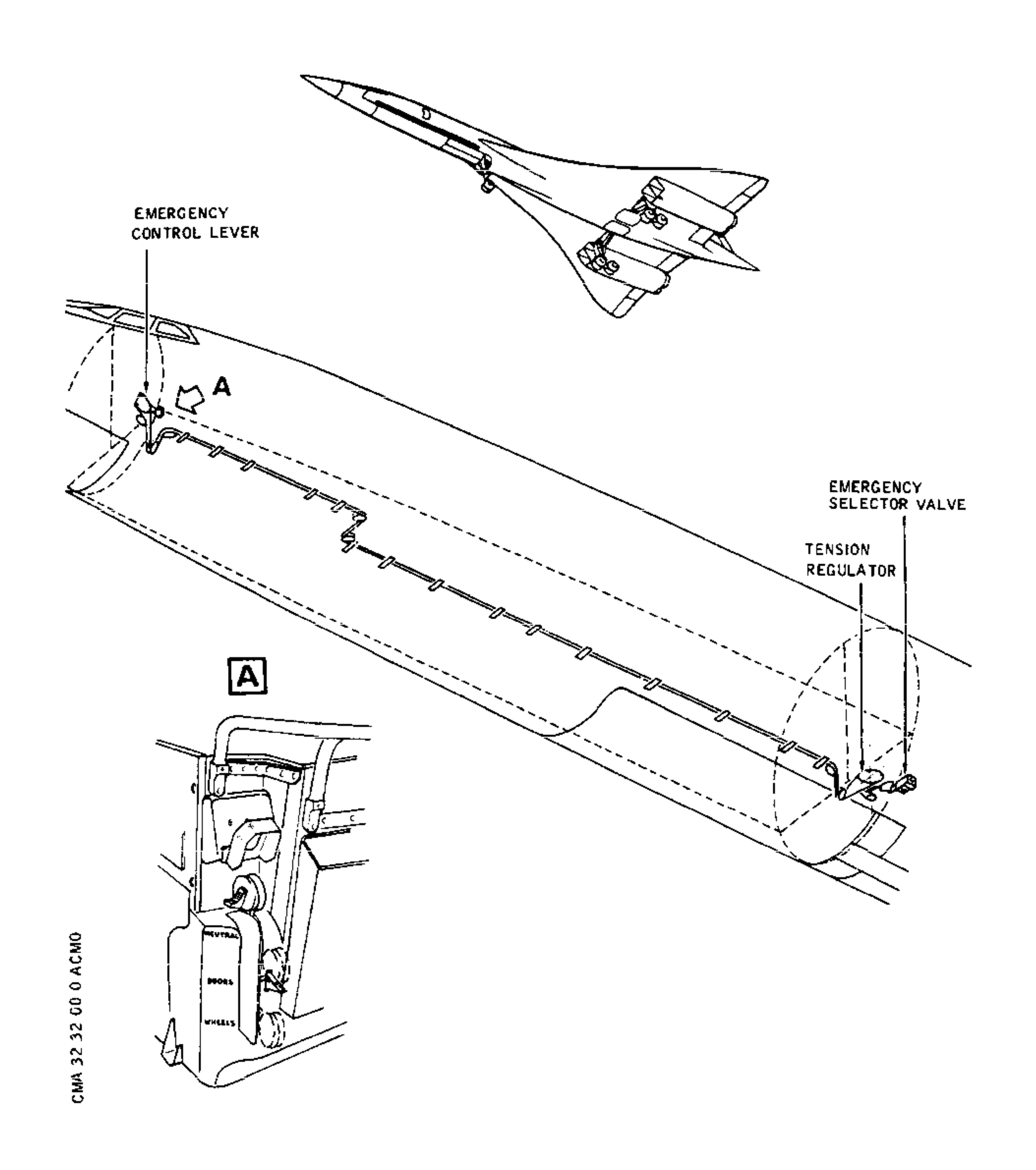
B. Hydraulic Control

The main units powered through the Yellow hydraulic system during Emergency gear extension are as follows :

(1) Emergency Selector Valve (4312)
It enables :

(a) Venting of Green hydraulic system by acting on nose gear and main gear return and depressurization valves.

(b) Opening of gear doors and extension of gear and



Mechanical Control Assembly
Figure 002

supply of Yellow hydraulic system pressure.

R

(2) Two gear return and depressurization selector valves (4012, 4014)

(a) Main gear return and depressurization selector valve (4012) located in zone 151-152 is accessible through access door 151DB.

(b) Nose gear return and depressurization selector valve (4014) is located at the nose landing gear bay left hand side.

NOTE : A pipe equipped with a non-return valve and a restrictor is installed between the Yellow tank return and the Green tank return of each selector to prevent fluid transfer from Green hydraulic system to Yellow hydraulic system due to thermal expansion.

(3) Six gear door uplocks (0408, 0409, 3506, 3507, 3508 and 3509).

(a) One uplock for each main gear main door (0408, 0409).

(b) Two uplocks (3506, 3508) for nose gear LH main door.

(c) Two uplocks (3507, 3509) for the nose gear RH main door.

(d) Each uplock uncludes an uplock release cylinder which enables Emergency uplock release of landing gear doors.

(4) An actuating jack for each gear door :
Main gear main door jack (3404, 3405)
Nose gear main door jack (3502, 3503).

(5) A restrictor for each gear door :
Main gear door restrictor (1479, 1480)
Nose gear door restrictor (1482, 1483).

(a) They ensure that uplock release of the nose gear doors is achieved before pressure is delivered to the actuating jacks.

(6) An uplock for each landing gear (3406, 3407, 3504).

(a) Each uplock includes a release cylinder which serves for gear release in Emergency operation.

(7) An actuating cylinder for each landing gear (3402, 3403, 3500, 3501, 1318).

(a) Two actuating cylinders (3500, 3501) are installed in parallel and actuate the nose landing gear. They include internal end-of-travel throttling.

(b) Each main landing gear actuating cylinder (3402, 3403) includes a pressure relief valve (5122, 5123) installed on actuating cylinder retraction chamber. The pressure relief valves serve to reduce the surge of pressure at the beginning of landing gear extension under high load factors. The pressure relief valves include an internal throttle valve.

(8) A shock absorber shortening jack (3420, 3421) for each main landing gear.

(a) They provide assistance during initiation of main gear movement.

(9) A metering valve for each main landing gear: Metering valve (4010, 4011) located in the associated gear bay.

R

(10) A priority valve (5117) located upstream of landing gear and door Emergency selector valve (4312) cuts off pressure to the landing gear hydraulic system if the pressure is below 180 bar (2610 psi).
A check valve (5131) serves to protect the priority valve from Yellow system return pressure.

3. Main Landing Gear Door Uplock (0408, 0409) (Ref. Fig. 003)

A. General

R Two identical uplocks, one on each MLG unit, ensure that gear door uplocking in gear uplocked or downlocked configuration. They maintain doors in this position until door uplock release order is given. In each uplock a spring-loaded hook ensures door uplocking. An actuating cylinder containing two tandem-mounted pistons serves for hydraulic release of the hook.
During Normal operation one of the pistons is operated by Green hydraulic system pressure.
During Emergency operation Yellow hydraulic system pressure is applied to the second piston.
An independent manual control serves for uplock hook release in Ultimate Emergency door opening.
A microswitch installed on the uplock serves to illuminate corresponding red light on gears position indicating unit when uplock hook is not locked in closed position.

B. Description

The uplock unit includes:

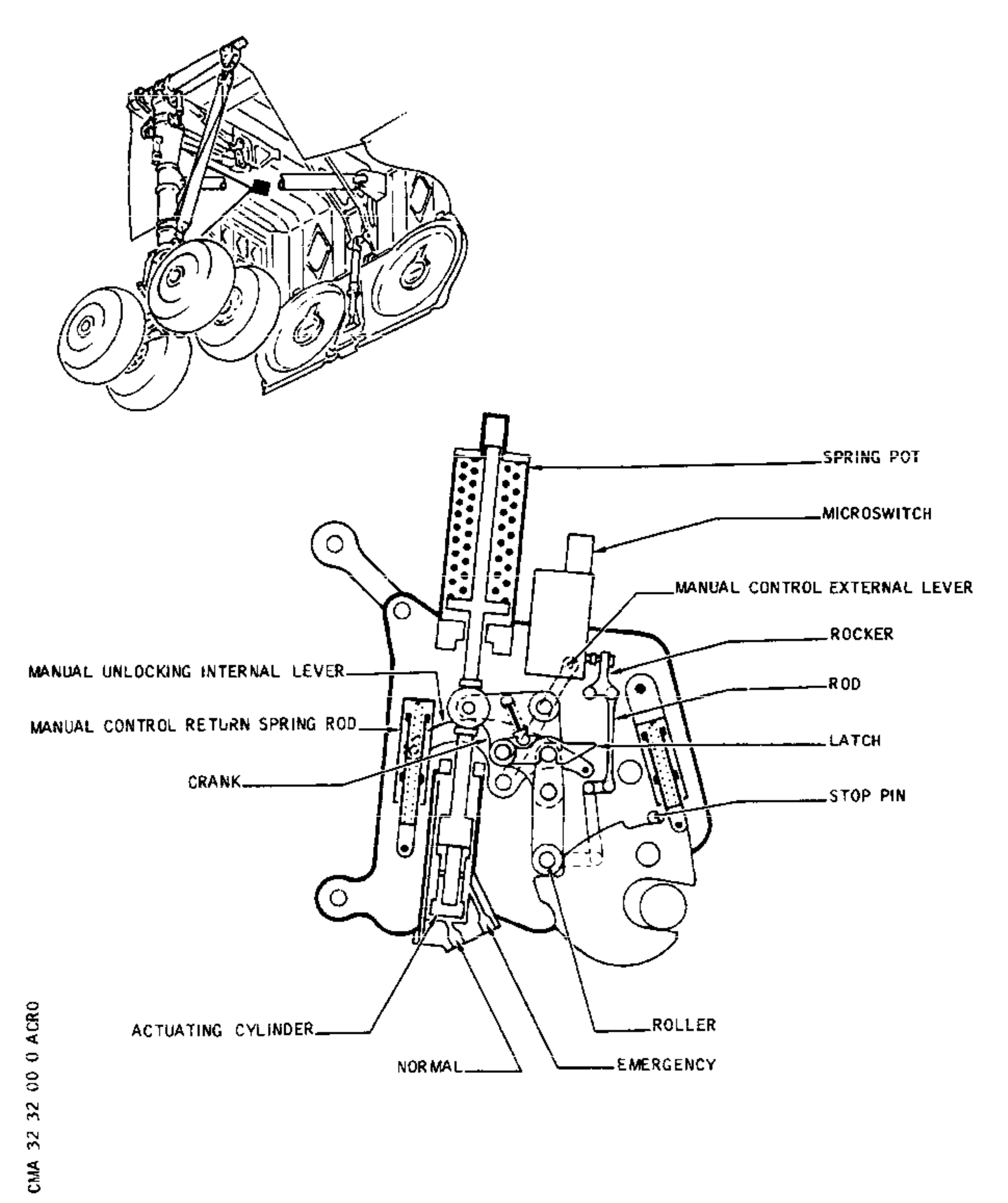
(1) An actuating cylinder containing two tandem-mounted pistons: one operated by pressure from the Green hydraulic system (Normal operation) and the other by Yellow hydraulic system pressure (Emergency operation).

(2) A spring pot provides return pressure for the actuating cylinder. This pot incorporates a hydraulic damper which absorbs shocks imported during uplock release.

(3) The hook uplock system consists of a bellcrank fitted with a roller, comprising two non-aligned levers and a latch. This system ensures hook uplock and hook manual release in Ultimate Emergency operation.
During Normal and Emergency operation the latch locks the two levers together.
During Ultimate Emergency operation the latch is released thus unlocking the levers.

(4) A hook maintained in released position by a spring rod. In uplocked position the bellcrank roller bears against the upper part of the hook.

(5) A splined shaft whose outer end connects to the Ultimate Emergency manual control lever. The inner end of this shaft is connected to a spring rod-loaded lever.
This spring rod enables the Ultimate Emergency system



Main Landing Gear Door Uplock
Figure 003

to be reset to neutral.

(6) A rod and rocker mechanism connected to the bellcrank actuates a microswitch.

C. Operation

(1) Uplock Release

Yellow hydraulic system pressure delivered to the uplock unit inlet port powers the actuating cylinder which moves the bellcrank and compresses the spring pot The bellcrank roller frees the hook which pivots under the weight of the doors. The hook moves to the end-of-travel position and is held there by the hook spring rod.
When Yellow hydraulic pressure is no longer applied, the spring pot loads the bellcrank against the hook and the roller moves into a groove in the hook thus creating a hard spot (overcentre effect).
The movement of the bellcrank causes the rocker to rotate and free the microswitch plunger. The microswitch signals that the hook is released.

4. Emergency Selector Valve (4312) (Ref. Fig. 004)

A. General

The Emergency selector valve is mechanically controlled from the flight compartment.
It serves to provide Yellow hydraulic system pressure during Emergency operation of landing gear and doors :

- Depressurization of Green hydraulic system
- Opening of doors
- Extension of landing gears

B. Description

The selector valve includes :

- a body containing the piston valve
- two check valves connected to the Yellow hydraulic delivery line and to the return to tank.
- three valves connected to landing gear and door supply.

C. Operation

(1) Landing gear and door Emergency control lever in NEUTRAL position.

Yellow hydraulic pressure is delivered to port A and pressure is thus available in the valve.

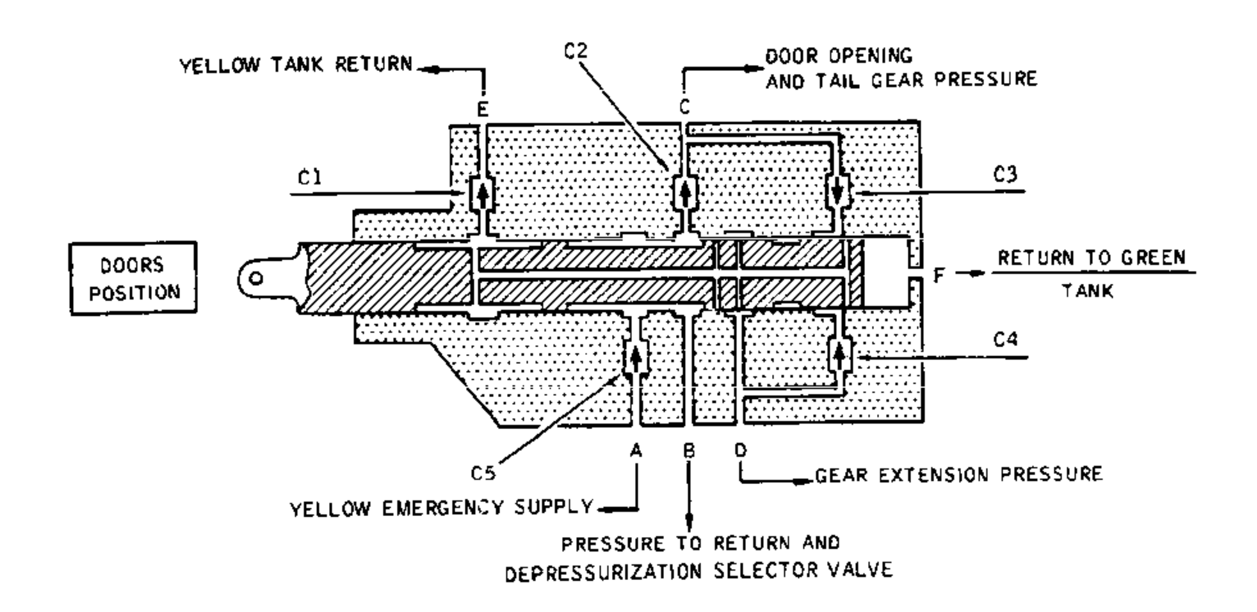
(2) Landing gear and door Emergency control lever in DOORS position.

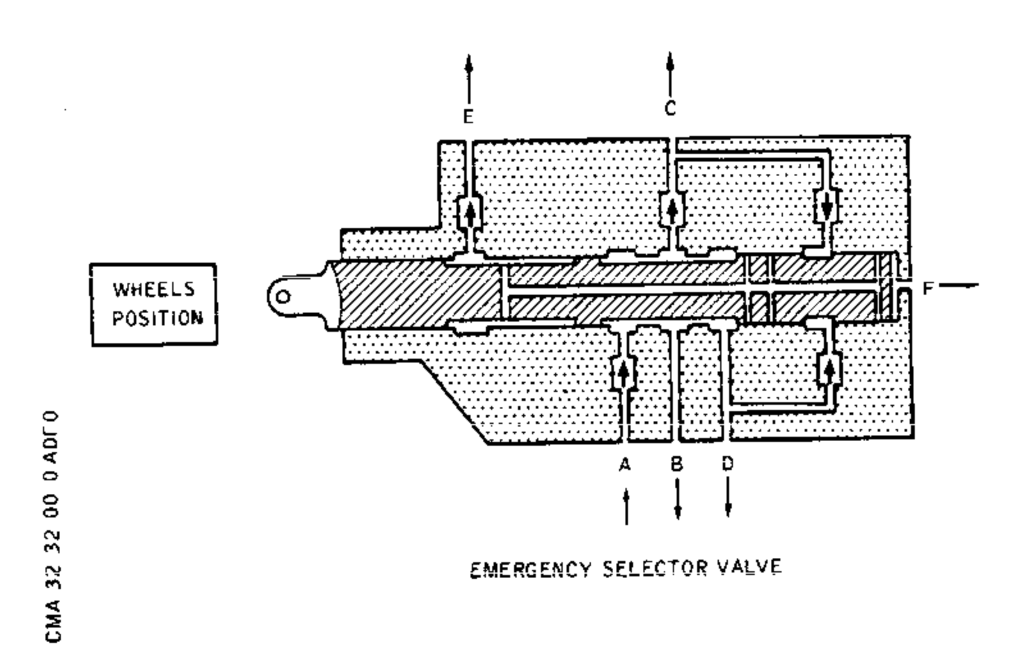
Yellow hydraulic pressure is firstly delivered to port B and almost simultaneously to port C.
Delivery of pressure to port B results in pressure being supplied to return and depressurization selector valves.
Delivery of pressure to port C results in pressure being supplied to opening side of door uplocks, door actuating jacks and tail gear actuating cylinder.

NOTE : Before changeover to DOORS position, F port is closed and B, C, D pressure is delivered to Yellow return tank.

(3) Landing gear and door Emergency control lever in WHEELS position.

Yellow hydraulic pressure is still ported through B and C. It is then ported through D. Pressure delivered





CMA 32 32 00 0 ADF 0

Emergency Selector Valve
Figure 004

from D results in pressure being delivered to opening side of the gear uplocks, gear actuating cylinders and main gear shock absorber shortening jacks.
Valves C2, C3 and C4 are intended to prevent back pressure from one of the hydraulic subsystems acting on the other two valves.
They furthermore prevent Green system back pressure from acting on the three hydraulic subsystems involved.
The check valve associated with the Yellow system, hydraulically cuts off pressure in the event of a drop in Yellow system hydraulic pressure.

5. Main Gear Metering Valve (4010, 4011) (Ref. Fig. 005)

A. General

Two identical metering valves are installed in the main landing gear bays.
Each valve which is installed in the main gear actuating cylinder supply line serves as follows :

- It cuts off pressure to the main gear actuating cylinder so long as the associated shortening lock is in locked positioned
- Slows down main gear movement at end-of-travel

B. Description

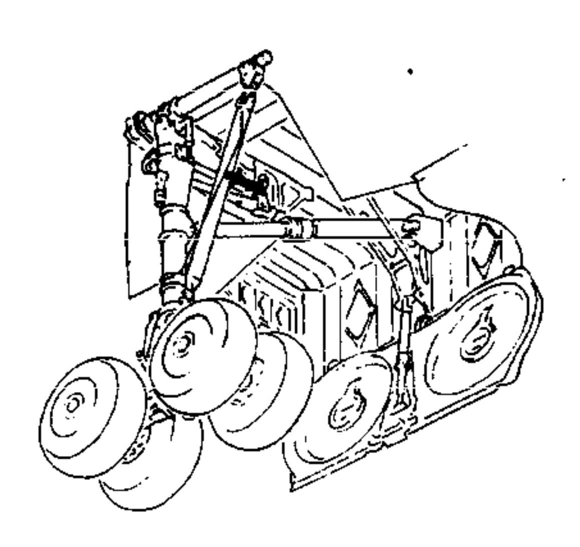
The main gear metering valve includes :

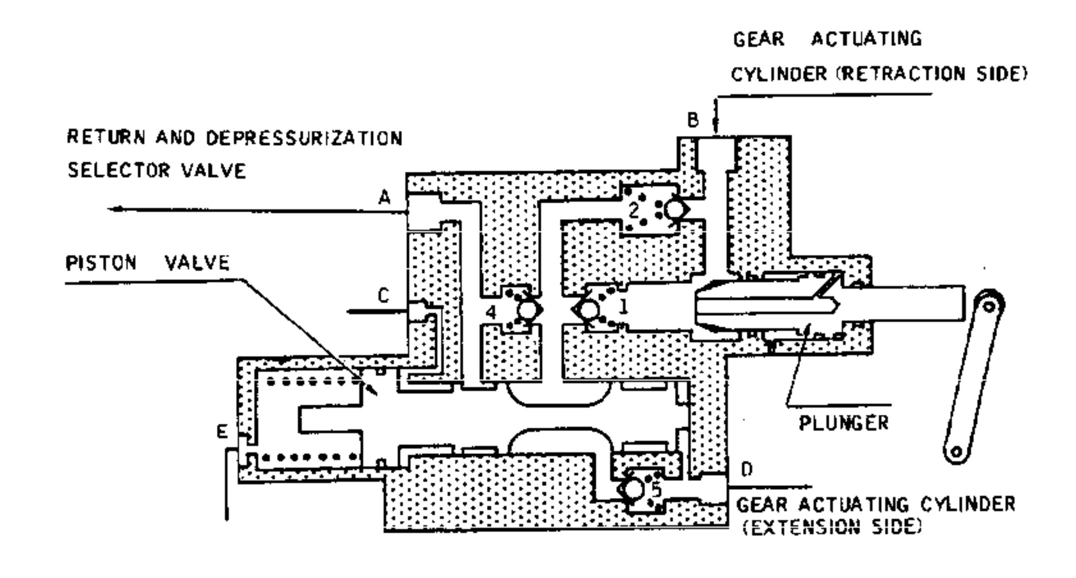
- A body containing a piston valve.
  The piston is operated by Green hydraulic system pressure. It is held in de-activated position by spring pressure.
- A plunger which is mechanically actuated by a roller connected to a lever. Load is applied to the plunger through the gear actuating cylinder.
- 4 check valves

C. Operation

Yellow hydraulic pressure is applied to extension side of the gear actuating cylinder. Return fluid from the retraction side of the gear actuating cylinder is ported from B to A via check valves (2), and position of the piston valve has no effect on this.

NOTE : The fluid is throttled throughout the landing gear Emergency extension by means of a throttle valve installed on the main gear actuating cylinder (retraction side).





CMA 32 32 00 0 ADUO

Main Gear Metering Valve
Figure 005

6. Tension Regulator

A. General

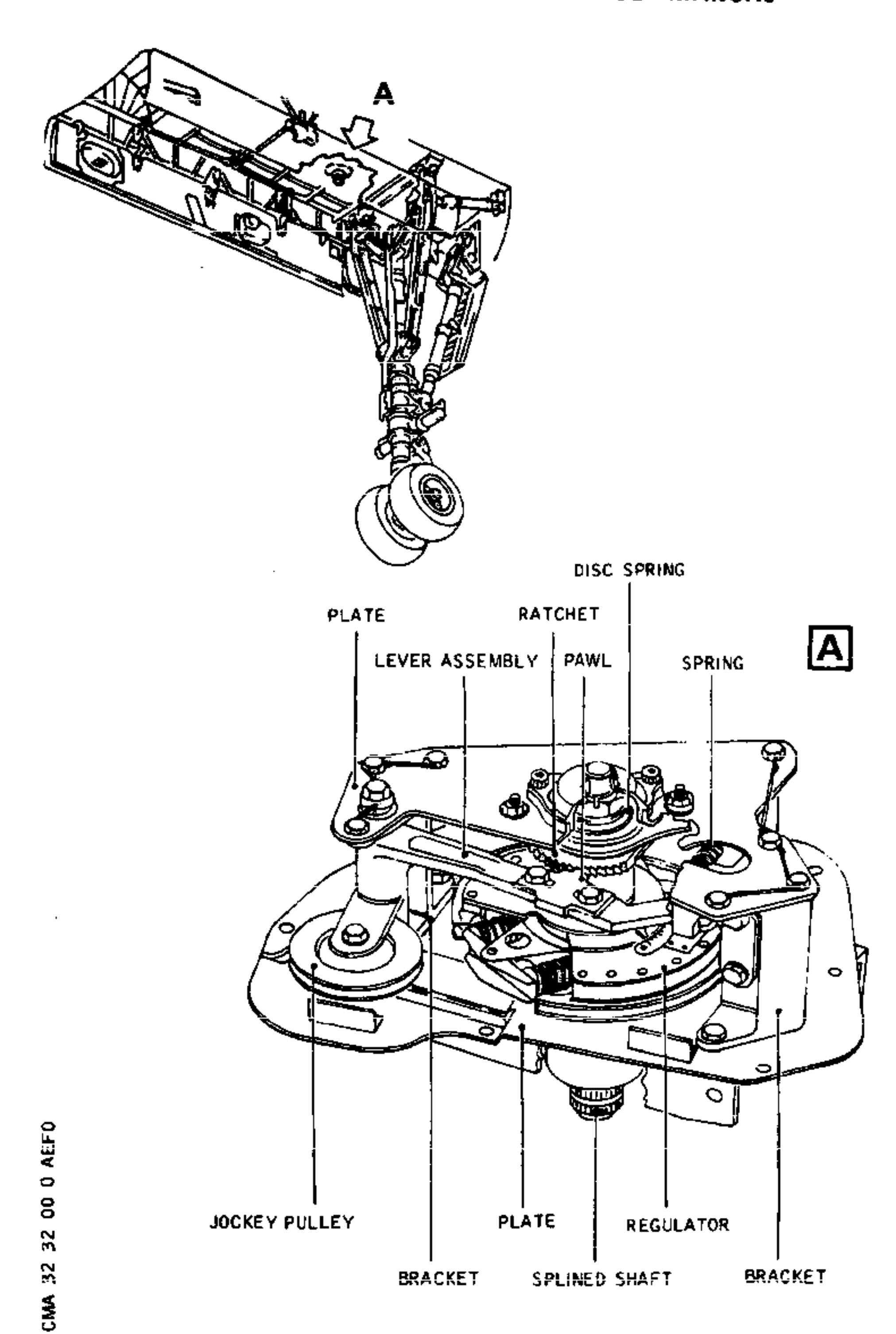
The tension regulator is installed in the landing gear Emergency extension control mechanism.
It incorporates a safety mechanism which prevents inadvertent in-flight operation of the landing gear or untimely operation in the event of rupture of a cable.

B. Description (Ref. Fig. 006)

The assembly consists of two plates connected together by means of brackets. One of the brackets includes a safety mechanism comprising a lever/pulley assembly fitted with a pawl which engages with a ratchet.
The regulator includes two pulley quadrants to which are attached the control cables. A spring-loaded lever system maintains correct cable tension. A pointer moving along a graduated sector serves for checking of cable tension.
A splined shaft located on the regulator centreline is fitted with a lever controlling the hydraulic selector valve.

C. Operation

Whenever the cables are installed and tensioned to their nominal value, the spring-loaded lever assembly tensions the cables and compensates for variations in length of the cables due to changes in ambient temperature.
The regulator moves under the action of the cables and its length-of-travel is limited by a spring washer. If the cable breaks, the jockey pulley in the lever/pulley assembly is no longer acted on. A return spring then loads the pawl against the ratchet. The regulator is thus held by the ratchet and untimely extension of the landing gear is prevented



Tension Regulator
Figure 006

7. Operation (Ref. Fig.007 and 008)

A. When landing gear Normal control lever (switch G5) is placed in DOWN position amber LH SHORT, UPPER LOCKS, RH SHORT indicator lights on gears position indicating unit (G52) come on. Lever in NEUTRAL position the amber indicator lights remain off.

B. When the landing gear and door Emergency control lever is placed in DOORS position the following sequence is accomplished :

- Green hydraulic system pressure to return tank
- Main gear and nose gear door uplocks are released
- Main gear and nose gear doors open and tail gear extends.

(1) Green hydraulic system pressure to return tank

Yellow hydraulic system pressure is supplied to landing gear and door return and depressurization selector valves (4012, 4014) through emergency selector valve (4312).

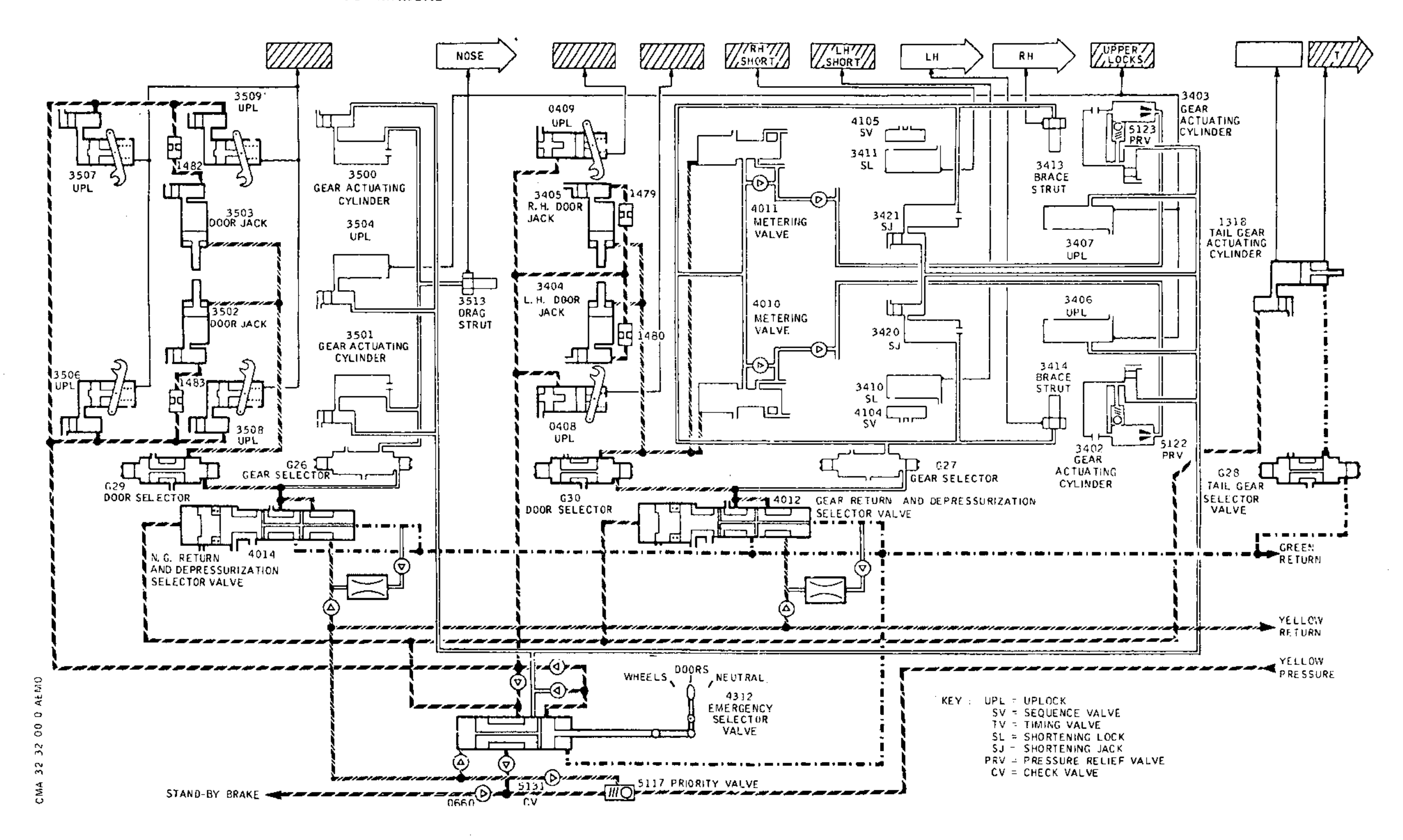
The return and depressurization selector valve piston moves and cuts off Green hydraulic system main supply. However, to prevent hydraulic pressure lock, that valve ports landing gear and door selector (G26, G27, G29, G30) Green supply and return to Yellow tank return.

(2) Uplock release, door opening and extension of tail gear.

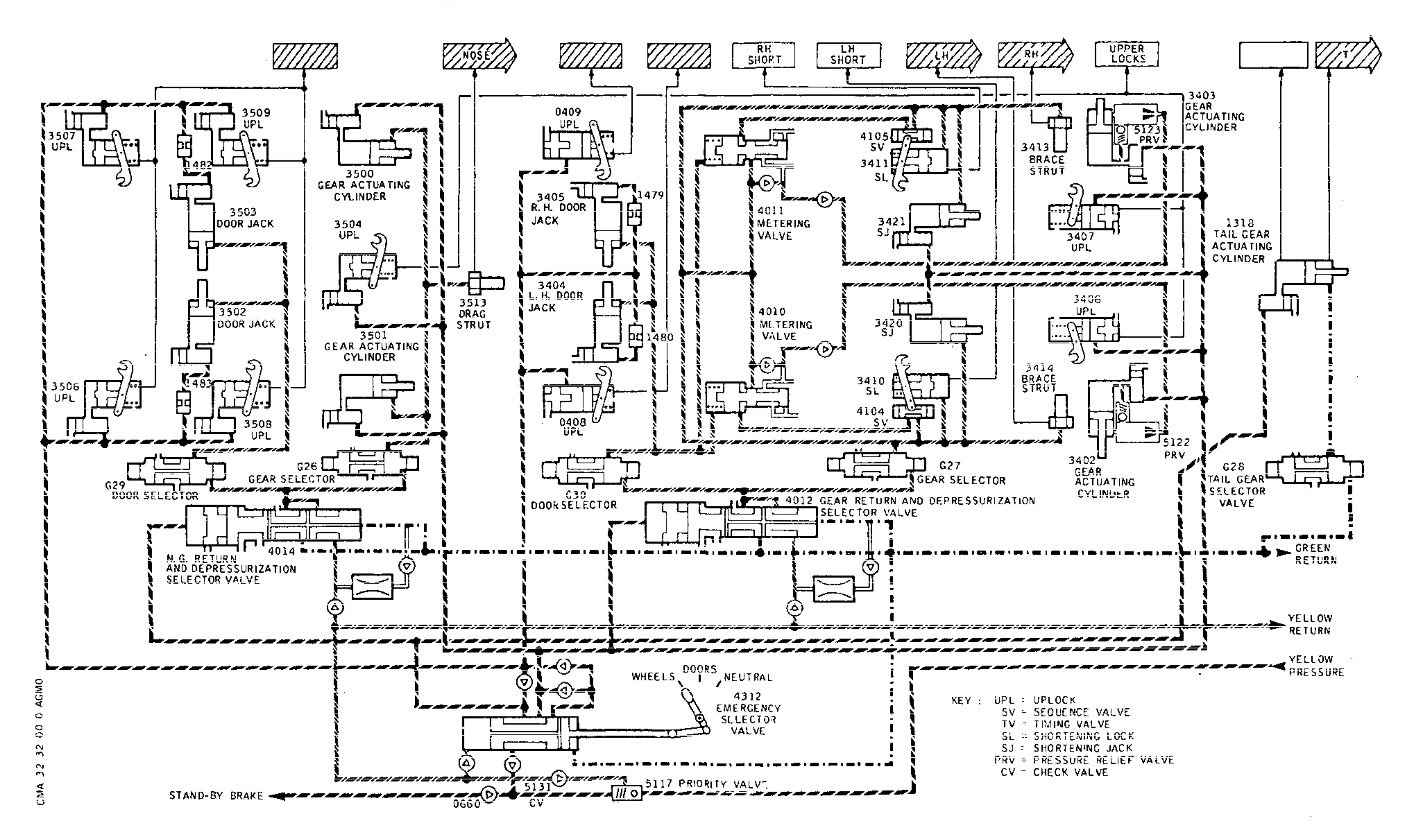
(a) Pressure is supplied through emergency selector (4312) to uplocks (0408, 0409, 3506, 3507, 3508, 3509) then to door jacks (3404, 3405, 3502, 3503) and tail gear actuating cylinder (1318) via their respective shuttle valves.

(b) Door manifolds include restrictors (1479, 1480, 1482, 1483) in the door jack Emergency pressure lines. They serve for uplock release of nose gear doors prior to pressurization of jacks.

(c) When landing gear Normal control lever is placed in DOWN position amber LH SHORT, UPPER LOCKS, RH SHORT indicator lights on gears position indicating unit (G52) come on.
On gears position indicating unit, the red lights corresponding to LH, NOSE, RH green arrows, as well as the green T arrow come on.



Emergency Extension - Opening of Doors,
Extension of Tail Gear
Figure 007



Emergency Extension : Main and
Nose Gear Extension
Figure 008

C. When the landing gear and door Emergency control lever is placed in WHEELS position the following sequence is accomplished :

- Uplock release of main gears
- Extension of all three gears and extension of main gear shock absorbers
- Downlocking of all three gears as well as locking of main gear shock absorbers.

(1) Uplock release and extension of the three gears.

(a) Pressure which is still applied to the door system is fed to gear uplock (3406, 3407, 3504), gear actuating cylinders (3402, 3403, 3500, 3501) and shock absorber shortening jack (3420, 3421) through the associated shuttle valves.

(b) Amber LH SHORT, UPPER LOCKS, RH SHORT indicator lights as well as red lights corresponding to LH, NOSE, RH green arrows, and green T arrow come on.

(c) Fluid from main gear actuating cylinders (3402-3403) (retraction side) is throttled throughout landing gear Emergency extension by means of pressure relief valve (5122-5123) internal throttle valves.

(2) Downlocking of all three gears and main gear shortening system.

(a) The main gears are mechanically downlocked by telescopic brace struts (3413, 3414). The nose gear is downlocked by telescopic drag strut (3513).

Main gear shock absorbers are mechanically locked by shortening locks (3410, 3411).

(b) On gears position indicating unit (G52) red lights corresponding to green LH, NOSE, RH arrows and green LH, NOSE, RH arrows remain on.

(c) The main doors of all three gears remain open.

(d) A check valve included in emergency selector valve (4312) in Yellow system supply hydraulically locks metering valves (4012, 4014) in the event of a drop in Yellow pressure due to flow demand.

(e) The Yellow pressure remains connected to the system until landing gear and door Emergency con-

trol lever is placed in NEUTRAL position.

NOTE : After Emergency gear extension following Green Normal system failure the landing gear and door Emergency control lever must remain in WHEELS position before performing any other operation and Yellow system is to be depressurized after the Green system.

8. Electrical Power Supplies

The Emergency landing gear extenison system indicating circuit is powered through the 28 VDC busbars.

SERVICE	BUSBAR	C/B PANEL
Landing Gear Normal Control	A MAIN 1P	15-215
Landing Gear Position Indicating	A ESS 3P	1-213

EMERGENCY EXTENSION - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, Servicing.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, Servicing.

1. General

The following information is intended to enable faults found in the landing gear Emergency extension system to be quickly rectified.
The defect can be isolated with the aid of the trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.
Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101).
The table provides information including component location, required for rectification. All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified check the wiring in accordance with the Wiring Diagram Manual.

2. Prepare

NOTE : Trouble shooting shall be carried out with the aircraft in flight configuration, with landing gear retracted and landing gear doors closed.

A. Jack up aircraft (Ref. 07-11-00).

B. Carry out a Normal landing gear retraction (Ref. 32-31-00, Adjustment/Test).

C. Make certain that the Green hydraulic system is depressurized (Ref. 29-11-00, Servicing).

D. On First Officer's instrument panel, place landing gear Normal control lever in DOWN position to supply gears position indicating unit G 52 with electrical power.

E. Make certain that the following circuit breaker is set

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16

F. Pressurize Yellow hydraulic system (Ref. 29-21-00,
R Servicing).

3. Emergency Extension Trouble Shooting

```
    *******************************************************
R   * With landing gear and door Emergency control lever*
R   * in DOORS position, on First Officer's instrument  *
R   * panel, red lights on gears position indicating    *
R   * unit are on.                                      *
    *******************************************************
         ||   |
         ||   |              -----------------------------------------------------
R        OK   NOT OK----| Not possible to place landing gear and door    |
R        ||             | Emergency control lever in DOORS position.     |
R        ||             | Ref. Chart 101.                                |
         ||              -----------------------------------------------------
         ||
    *******************************************************
R   * On gears position indicating unit, red light      *
R   * corresponding to green NOSE arrow is on.          *
    *******************************************************
         ||   |
         ||   |              -----------------------------------------------------
R        OK   NOT OK----| On gears position indicating unit, red light   |
R        ||             | corresponding to green NOSE arrow is off.      |
R        ||             | Ref. Chart 102.                                |
         ||              -----------------------------------------------------
         ||
    *******************************************************
R   * On gears position indicating unit, red lights     *
R   * corresponding to LH and RH green arrows are on.   *
    *******************************************************
         ||   |
         ||   |              -----------------------------------------------------
R        OK   NOT OK----| On gears position indicating unit, red light   |
R        ||             | corresponding to LH or RH green arrow is off.  |
R        ||             | Ref. Chart 103.                                |
         ||              -----------------------------------------------------
         ||
    *******************************************************
R   * On gears position indicating unit, red light      *
R   * corresponding to green T arrow is off.            *
    *******************************************************
         ||   |
         ||   |              -----------------------------------------------------
R        OK   NOT OK----| On gears position indicating unit, red light   |
R        ||             | corresponding to green T arrow is on.          |
R        ||             | Ref. Chart 104.                                |
         ||              -----------------------------------------------------
         ||
         ||
         ||
         ||
```

```
    ****************************************************
R   * With landing gear and door Emergency control lever*
R   * in WHEELS position, amber UPPER LOCKS, LH SHORT   *
R   * and RH SHORT lights on gears position indicating  *
R   * unit are off.                                     *
    ****************************************************
         ||   |
         ||   |      ------------------------------------------------
R        OK   NOT OK----| Not possible to place landing gear and door  |
R        ||             | Emergency control lever in WHEELS position   |
R        ||             | Ref. Chart 105.                              |
         ||             ------------------------------------------------
         ||
    ****************************************************
R   * On gears position indicating unit, amber UPPER    *
R   * LOCKS light is off.                               *
    ****************************************************
         ||   |
         ||   |      ------------------------------------------------
R        OK   NOT OK----| On gears position indicating unit, amber UPPER |
R        ||             | LOCKS light is on.                           |
R        ||             | Ref. Chart 106.                              |
         ||             ------------------------------------------------
         ||
    ****************************************************
R   * On gears position indicating unit, amber LH SHORT *
R   * and RH SHORT lights are off.                      *
    ****************************************************
         ||   |
         ||   |      ------------------------------------------------
R        OK   NOT OK----| On gears position indicating unit, amber LH  |
R        ||             | SHORT or RH SHORT light is on.               |
R        ||             | Ref. Chart 107.                              |
         ||             ------------------------------------------------
         ||
    ****************************************************
R   * On gears position indicating unit, green NOSE     *
R   * arrow is on.                                      *
    ****************************************************
         ||   |
         ||   |      ------------------------------------------------
R        OK   NOT OK----| On gears position indicating unit, green NOSE |
R        ||             | arrow is off.                                |
R        ||             | Ref. Chart 108.                              |
         ||             ------------------------------------------------
         ||
         ||
         ||
```

```
   *****************************************************
R  * On gears position indicating unit, green LH and RH*
R  * arrows are on.                                    *
   *****************************************************
       ||   |
       ||   |       -------------------------------------------------
R      OK  NOT OK----| On gears position indicating unit, green LH or |
R      ||            | RH arrow is off.                                |
R      ||            | Ref. Chart 109.                                 |
       ||           -------------------------------------------------
       ||
   *****************************************************
R  * On gears position indicating unit, green T arrow  *
R  * is on.                                            *
   *****************************************************
       ||   |
       ||   |       -------------------------------------------------
R      OK  NOT OK----| On gears position indicating unit, green T      |
R      ||            | arrow is off.                                   |
R      ||            | Ref. Chart 110.                                 |
       ||           -------------------------------------------------
       ||
   *****************************************************
R  * Restore landing gear and doors to normal operating*
R  * condition.                                        *
   *                                                   *
R  * On First Officer's instrument panel, make certain *
R  * that the four green arrows on gears position      *
R  * indicating unit are illuminated (gears downlocked)*
   *                                                   *
R  * Install landing gear and shortening mechanism     *
R  * safety devices.                                   *
   *                                                   *
R  * Lower aircraft onto its wheels.                   *
   *****************************************************
```

```
   **************************************
R  * NOT POSSIBLE TO PLACE LANDING GEAR *
R  * AND DOOR EMERGENCY CONTROL LEVER IN*
R  * DOORS POSITION                     *
   **************************************

   *****************************************************
R  * Remove floor panel 221UF and check on cable       *
R  * tension regulator that cable tension is correct.  *
   *****************************************************
        |        |
        |        |         ---------------------------------------------
R       |        NO--------| Adjust tension of cable concerned or      |
R       |                  | replace cable [1].                        |
        |                  ---------------------------------------------
        |
        |                  ---------------------------------------------
R       YES----------------| Replace landing gear and door Emergency   |
R                          | selector valve [2].                       |
                           ---------------------------------------------
```

R Chart 101

```
   *************************************
R  * ON GEARS POSITION INDICATING UNIT, *
R  * RED LIGHT CORRESPONDING TO GREEN   *
R  * NOSE ARROW IS ON.                  *
   *************************************

   ******************************************************
R  * Check that nose gear door uplocks release          *
R  * correctly.                                         *
   ******************************************************
        |        |
        |        |         ----------------------------------------------
R       |        NO--------| Replace faulty nose gear door uplock [3]. |
        |                  ----------------------------------------------
        |
        |                  ----------------------------------------------
R       YES----------------| Replace actuating jack [4] of nose gear    |
R                          | door concerned.                            |
                           ----------------------------------------------
```

R Chart 102

```
   **************************************
R  * ON GEARS POSITION INDICATING UNIT  *
R  * RED LIGHT CORRESPONDING TO LH or RH*
R  * GREEN ARROW IS OFF.                *
   **************************************

   ***************************************************
R  * Check that LH or RH main gear door uplock releases*
R  * correctly.                                      *
   ***************************************************
         |        |
         |        |         ---------------------------------------------
R        |        NO--------| Replace faulty door uplock [5].           |
         |                  ---------------------------------------------
         |
         |                  ---------------------------------------------
R       YES-----------------| Replace actuating jack [6] of main gear   |
R                           | door concerned.                           |
                            ---------------------------------------------
```

R Chart 103

```
   **************************************
R  * ON GEARS POSITION INDICATING UNIT,*
R  * RED LIGHT CORRESPONDING TO GREEN T*
R  * ARROW IS ON.                      *
   **************************************

   ****************************************************
R  * Check that tail gear actuating cylinder micro-   *
R  * switches are correctly adjusted.                 *
   ****************************************************
        |        |
        |        |          ============================================
R       |        NO--------| Adjust tail gear actuating cylinder micro-|
R       |                  | switches [7].                             |
        |                   --------------------------------------------
        |
        |                   --------------------------------------------
R      YES-----------------| Replace tail gear actuating cylinder [8]. |
                            --------------------------------------------
```

R Chart 104

```
   **************************************
R  * NOT POSSIBLE TO PLACE LANDING GEAR *
R  * AND DOOR EMERGENCY CONTROL LEVER IN*
R  * WHEELS POSITION.                   *
   **************************************

   *****************************************************
R  * On gears position indicating unit, amber UPPER    *
R  * LOCKS, LH SHORT and RH SHORT lights are on.       *
   *****************************************************
        |
        |                 ----------------------------------------------
R       YES---------------| Replace landing gear and door Emergency    |
R                         | selector valve [2].                        |
                          ----------------------------------------------
```

R Chart 105

```
    ***************************************
R   * ON GEARS POSITION INDICATING UNIT, *
R   * AMBER UPPER LOCKS LIGHT IS ON.     *
    ***************************************

    *****************************************************
R   * Check that nose and main gear uplocks release     *
R   * correctly.                                        *
    *****************************************************
         |        |
         |        |          ----------------------------------------
R        |        |          | Replace faulty landing gear uplock :  |
R        |        NO---------| Nose gear : [9]                       |
R        |                   | Main gear : [10]                      |
         |                   ----------------------------------------
         |
         |                   ----------------------------------------
R        |                   | Replace actuating cylinder of landing gear|
R       YES------------------| concerned :                           |
R                            | Nose gear : [11]                      |
R                            | Main gear : [12]                      |
                             ----------------------------------------
```

R Chart 106

```
   **************************************
R  * ON GEARS POSITION INDICATING UNIT, *
R  * AMBER LH SHORT OR RH SHORT LIGHT IS*
R  * ON.                                *
   **************************************

   ******************************************************
R  * Check that microswitch of shortening lock concern-*
R  * ed operates correctly.                             *
   ******************************************************
           |         |
           |         |          ----------------------------------------------
R          |         NO---------| Replace microswitch [13] of shortening    |
R          |                    | lock concerned.                            |
           |                    ----------------------------------------------
           |
           |                    ----------------------------------------------
R         YES-------------------| Replace faulty shortening lock [14].       |
                                ----------------------------------------------
```

R Chart 107

```
    ***************************************
R   * ON GEARS POSITION INDICATING UNIT, *
R   * GREEN NOSE ARROW IS OFF.            *
    ***************************************

    ****************************************************
R   * Check that nose gear telescopic drag strut micro- *
R   * switch operates correctly.                        *
    ****************************************************
         |        |
         |        |        -------------------------------------------
R        |        NO-------| Replace telescopic drag strut microswitch |
R        |                 | [15].                                     |
         |                 -------------------------------------------
         |
         |                 -------------------------------------------
R        YES---------------| Replace faulty telescopic drag strut [16].|
                           -------------------------------------------
```

R Chart 108

```
   ***************************************
R  * ON GEARS POSITION INDICATING UNIT, *
R  * GREEN LH OR RH ARROW IS OFF.       *
   ***************************************

   ******************************************************
R  * Check that microswitch of telescopic brace strut  *
R  * concerned operates correctly.                      *
   ******************************************************
         |        |
         |        |          --------------------------------------------
R        |        NO--------| Replace microswitch [17] of telescopic    |
R        |                  | brace strut concerned.                     |
         |                   --------------------------------------------
         |
         |                   --------------------------------------------
R        YES----------------| Replace faulty telescopic brace strut [18]|
                             --------------------------------------------
```

R Chart 109

```
     ***************************************
R    * ON GEARS POSITION INDICATING UNIT, *
R    * GREEN T ARROW IS OFF.              *
     ***************************************

     *****************************************************
R    * Check that tail gear actuating cylinder micro-    *
R    * switch G55 operates correctly.                    *
     *****************************************************
              |        |
              |        |        ---------------------------------------------
R             |        NO-------| Adjust actuating cylinder microswitch G55 |
R             |                 | [7].                                      |
              |                 ---------------------------------------------
              |
              |                 ---------------------------------------------
R            YES----------------| Replace tail gear actuating cylinder [8]. |
                                ---------------------------------------------
```

R Chart 110

	ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
R R R R	[1] Cables	211 to 221	125/ 126		Under passenger compartment floor	32-32-00 A/T	
R R	[2] Emergency selector valve	711	127	4312	Nose gear bay	32-32-11 R/I	
R R R	[3] Nose gear door uplock	711/ 712	127/ 128	3506 to 3509	Nose gear bay	32-31-62 R/I	
R R	[4] Nose gear door jack	711/ 712	127/ 128	3502 3503	Nose gear bay	32-31-64 R/I	
R R	[5] Main gear door uplock	731/ 741	571/ 671	0408 0409	Main gear bay	32-31-12 R/I	
R R	[6] Main gear door jack	731/ 741	571/ 671	3404 3405	Main gear bay	32-31-14 R/I	
R R	[7] Tail gear microswitch	753/ 754	313	G55/ G56	Tail gear bay	32-31-82 A/T	32-61-01
R R R	[8] Tail gear actuating cylinder	753/ 754	313	1318	Tail gear bay	32-31-82 R/I	
R R	[9] Nose gear uplock	711	127	3504	Nose gear bay	32-31-67 R/I	
R R	[10] Main gear uplock	731/ 741	571/ 671	3406 3407	Main gear bay	32-31-15 R/I	
R R R	[11] Nose gear actuating cylinder	711/ 712	127/ 128	3500 3501	Nose gear bay	32-31-68 R/I	
R R R	[12] Main gear actuating cylinder	731/ 741	733/ 743	3402 3403	Main gear bay	32-31-21 R/I	

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
R [13] Shortening lock micro-switch	732 AB 742 AB	733 743	G63 G64	Shortening lock	32-31-27 R/I	32-61-01
R [14] Shortening lock	732 AB 742 AB	733 743	3410 3411	Main gear leg	32-31-27 R/I	
R [15] Nose gear downlocked microswitch		715	G22	Nose gear telescopic drag strut	32-31-71 R/I	32-61-01
R [16] Nose gear telescopic drag strut		715	3513	Nose gear bay	32-31-71 R/I	
R [17] Main gear downlocked microswitch	731/ 741	733/ 743	G53 G54	Main gear telescopic brace strut	32-31-28 R/I	32-61-01
R [18] Main gear telescopic brace strut	731/ 741	733/ 743	3413 3414	Main gear bay	32-31-28 R/I	

R Component Identification
R Table 101

EMERGENCY EXTENSION - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Adjustment of Emergency Control After Replacement of :

(1) Emergency control lever assembly.

(2) Cables.

(3) Tension regulator.

(4) Gear and doors Emergency selector valve.

B. Door Ground Opening Test

C. Gear and Door Functional Tests

D. Gear and Door System Tests

2. Adjustment of Emergency Control (Ref. Fig. 501, 502 and 503)

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Access Platform 3.97 m (13 ft.)	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Pin Assy - Console Pulley Lever Rigging	D925363000
Pin Assy - Regulator Rigging	D925363001
Wrench for Cable Tensioners	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Connect hydraulic ground power unit to Green system.

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(8) Remove locking cap and open landing gear doors by operating handle on the nose gear leg.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(12) Display warning notice in flight compartment prohibiting operation of brakes.

(13) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(14) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(15) Install safety collars on door actuating jacks.

(16) Remove floor panels 221DF, 221HF, 221LF, 221QF, 221UF, 221VF.

(17) In zone L211 remove centre console side covers.

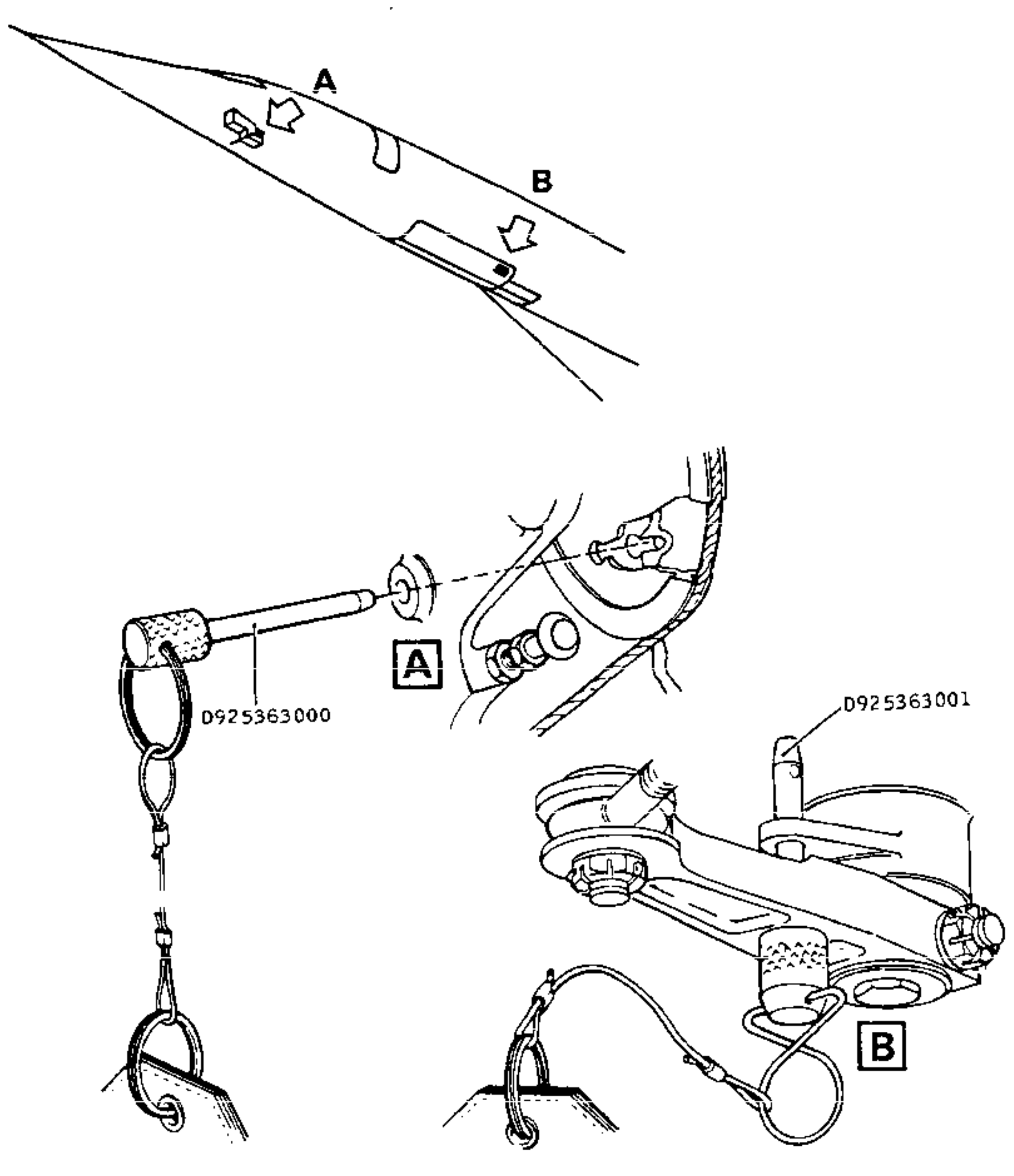
(18) Remove tension regulator cover.

C. Adjustment of the Control between Centre Console and Tension Regulator

NOTE : After a change of the stops on the centre console casting, initially set stops to stand out 1.20 in. (30.5 mm) beyond the casting.
Do not lockwire the stops at this stage.

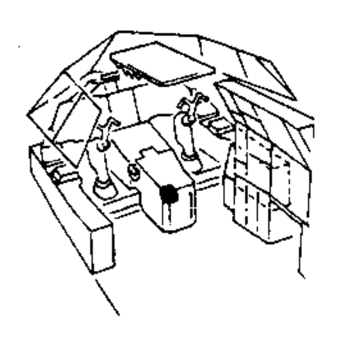
(1) Disconnect the connecting rod (Tension regulator gear and doors Emergency selector valve).

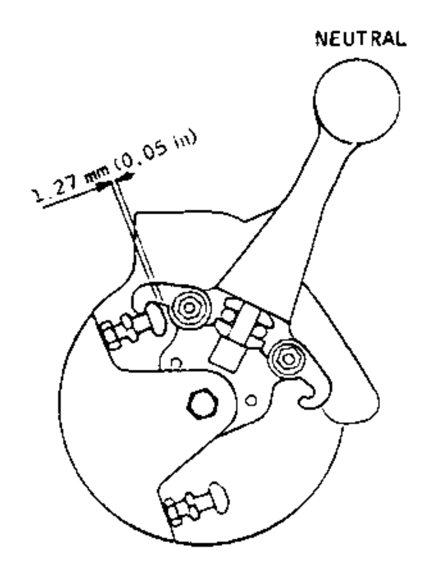
(2) Make certain that cables from control lever to

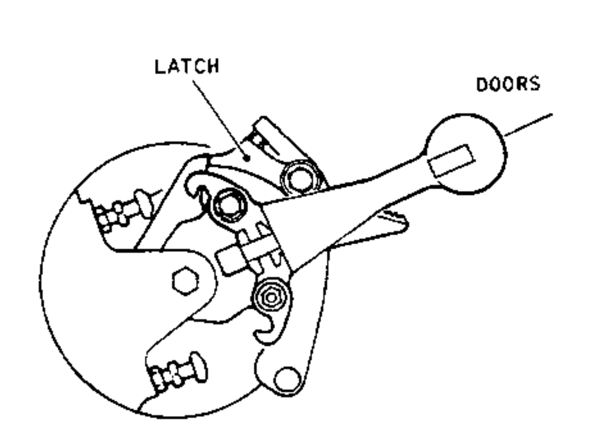


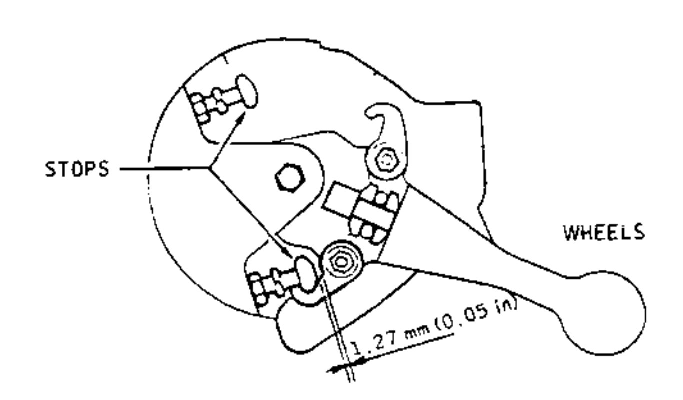
CMA 32 32 00 5 AAM0

Emergency Control Rigging
Figure 501



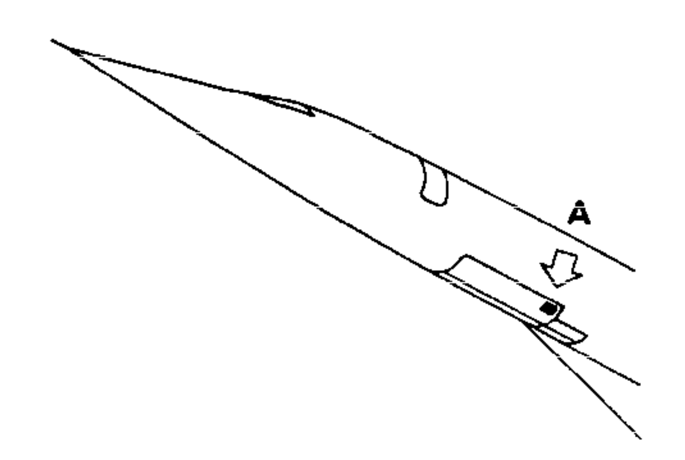


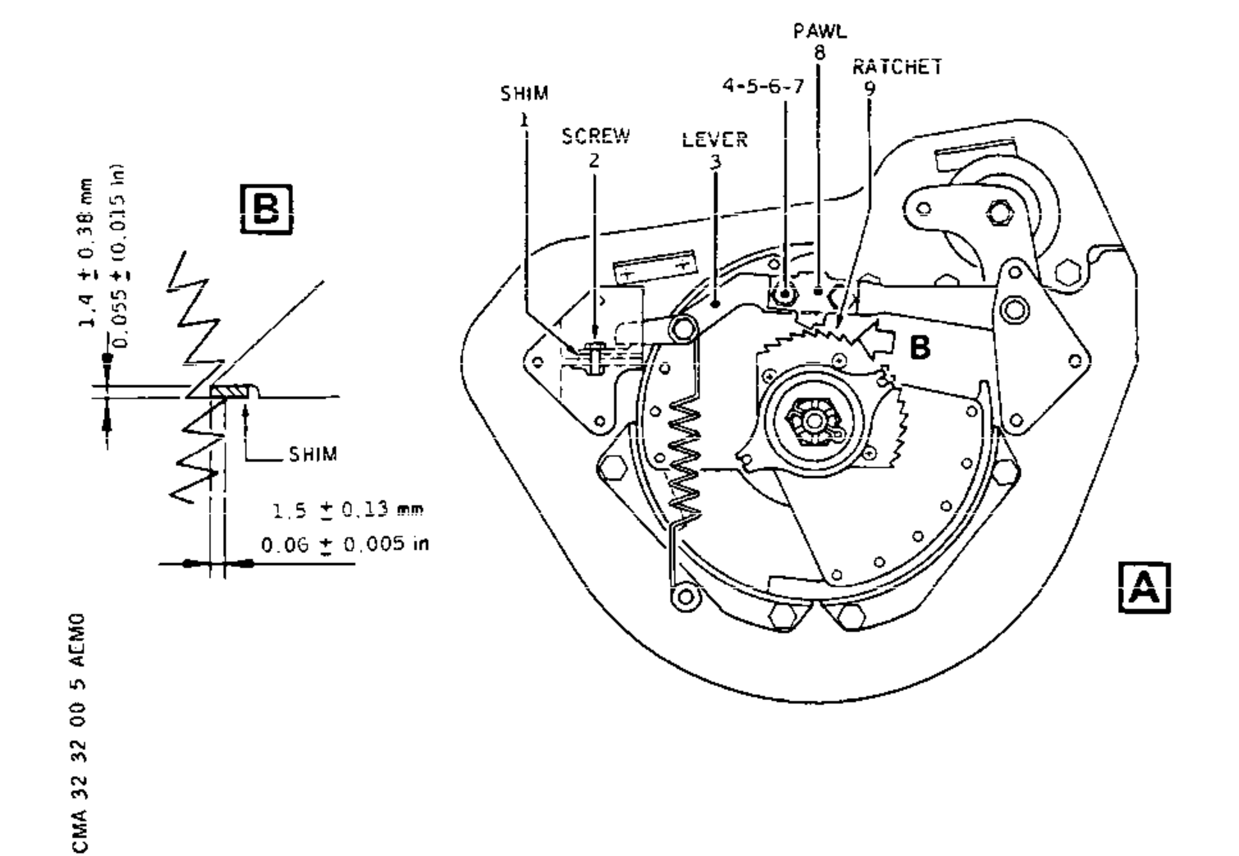




CMA 32 32 00 5 ACMO

Adjustment of Control Lever Stops
Figure 502





Adjustment of Tension Regulator
Figure 503

regulator are correctly seated in the pulley grooves.

(3) Move Emergency control lever located on the centre console towards the DOORS position, until it is possible to rig the pulley and the rear housing with rigging pin D925363000. If necessary, adjust latch to facilitate installation of rigging pin.

(4) Gradually tighten each cable tensioner until :

(a) The regulator pointer indicates control position on scale (no.4) for an ambient temperature of 15°C.

NOTE : With all other ambient temperatures :

A correction of 0.4 divisions shall be applied per 15° C variation with respect to the reference temperature of 15°. The correction shall be made so that the pointer moves along the scale towards the hot mark (H) in the case of temperatures above 15° C and towards the cold mark (C) in the case of temperatures below 15° C.

(b) Rigging pin D925363001 can be easily inserted in the rigging holes of bearing housing assembly and regulator lever.

(5) Remove rigging pin D925363001.

(6) Gently drum on the cables to set up vibrations in the system and thereby overcome any undue friction.

(a) Make certain that regulator pointer still indicates the correct value as specified in paragraph (4). If necessary adjust cables until the correct setting as described in paragraph (4) is achieved.

(7) Grasp both operating cables and apply a smooth and even load. After release of the load the regulator indicator must return to its original position.

D. Connecting Rod Adjustment (Regulator to Doors and Gear Emergency Selector)

(1) Make certain that rigging pin D925363000 is correctly installed.

(2) In zone L127 insert rigging pin D925363001 in holes in lever assembly and the regulator bearing housing.

(3) Connect the connecting rod to the gear and doors Emergency selector valve.

(4) Adjust the connecting rod until the line marked on the Emergency selector valve lever is in central position and within the tolerance band on the Emergency selector valve position indicator plate.

(a) Run down and tighten the connecting rod lock nuts.

(5) Remove rigging pins D925363000 and D925363001.

(6) On centre console, move the Emergency control lever through complete range of travel. Place the lever in NEUTRAL position then move it to and leave it in DOORS position.

(a) In zone L127 if the indicator on the Emergency selector valve lever is not in the adjustment range of the indication plate, make another adjustment without disconnecting the connecting rod.

(7) On centre console successively place the Emergency control lever in the NEUTRAL and WHEELS position. In zone L127 make certain that in each position the Emergency selector valve indicator is centred in the corresponding adjustment ranges.

(a) If necessary, adjust the stops to maintain a gap of 1.27 mm (0.05 in.).

E. Adjustment of the Safety Device

(1) Adjustment of regulator Safety device.

(a) On centre console place the Emergency control lever in DOORS position. In zone L127, rig the lever and the regulator bearing housing with pin D925363001.

(b) Remove cotter pins (7), nuts (6), recover washers (5) and bolt (4).

(c) Rig pawl (8) to provide clearance of 1.4 ± 0.38 mm (0.055 ± 0.015 in.) between the face of tooth on ratchet (9) and face of adjustable tooth on pawl (8).
Secure pawl (8) with bolts (4), washers (5), nuts (6).

(d) Make certain that the pawl (8) tooth engages with one tooth of ratchet (9) : 1.5 ± 0.13 mm (0.06 ± 0.005 in.)

(d1) If the specified depth-of-engagement cannot be achieved rework (grind) shim (1).

(d2) Install shim (1) after rework, with screw (2)

(e) Remove pin D925363001

(2) Adjustment of Safety device on aircraft.

(a) Make certain that regulator rigging pins have been removed.

(b) Temporarily mark pawl (8) and lever (3) to indicate position of teeth on ratchet, and remove pawl. Operate control lever several times through complete range of travel, then bring it back slowly from DOORS to NEUTRAL position. Return pawl (8) to initial position.

(c) If necessary loosen nuts (6) and adjust pawl (8) to obtain a clearance of 1.4 ± 0.38 mm (0.055 ± 0.015 in). Tighten screws (4) and nuts (6) and check that pawl engages correctly in ratchet teeth 1.5 ± 0.13 mm (0.06 ± 0.005 in). Safety nuts (6) with cotter pins.

(d) On centre console, operate Emergency control lever and move it slowly to DOORS, then WHEELS position Check that pawl (8) does not touch ratchet (9) troughout travel range.

(e) If the pawl touches the ends of ratchet teeth the load on the slip clutch can be adjusted until it no longer touches them.

(f) Check that when Emergency control lever is placed in WHEELS position the tension on the control cable does not exceed 27 lbf (11.9 daN) over the entire travel range.

F. Final Adjustment of the Emergency Control

(1) Make certain that pins D925363000 and D925363001 have been removed.

(2) On centre console operate the Emergency control lever at least three times over full travel, then place it on

its stop in DOORS position.

(a) In zone L127 check that the landing gear and doors Emergency selector valve lever indicator is in the centre and within the tolerance band on the Emergency selector position indicator plate.

(3) Check that the pointer of the tension regulator does not move when the Emergency control lever moves full travel.

(4) Check that when the Emergency control lever moves full travel, the safety device engages.

(5) Safety the cable tensioners after checking that thread engagement is satisfactory.

Wirelock the regulator - Emergency selector valve connecting rod lock nuts (Ref. 20-21-13).
Torque lock nuts of the stops located in centre console housing to between 27 and 32 lbf.in. (0.3 and 0.35 m.daN), then wirelock the lock nuts (Ref. 20-21-13).

Install the regulator cover making certain that the cables do not come in contact with the cover during operation of the landing gear Emergency control. If so, loosen the cover to insure a constant gap of at least 0.030 in. (0.7 mm).
Wirelock the screws (Ref. 20-21-13).

G. Close-Up

(1) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(2) On centre console, make certain that the door and gear Emergency control lever is in NEUTRAL position.

(3) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(4) Install lateral cover of centre console housing.

(5) Install floor panels.

(6) Remove safety collars.

(7) Remove access platform.

(8) Remove safety clips and tags and reset the circuit breakers.

(9) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(12) Close landing gear doors by operating handle located on the nose gear leg. Install locking cap.

(13) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(14) Shut down and disconnect hydraulic power unit.

(15) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(16) Close access doors.

3. Test of Door Opening with the Aircraft on the Ground

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(3) On the centre console, make certain that the door and gear Emergency control lever is in NEUTRAL position.

(4) Make certain that the visor is not uplocked.

(5) Make certain that the following circuit breakers are reset.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH UC WEIGHT SW "B" SYS SUP	3-213	G 294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Test

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(2) On centre console, place landing gear and door Emergency control lever in DOORS position.

(a) Main and nose landing gear doors open.

(b) On the First Officer's instrument panel, on gears position indicating unit red lights corresponding to green LH, NOSE, RH arrows come on.

(3) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(4) Shut down yellow hydraulic system and pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) On nose and LH main landing gear legs, remove locking caps and place operating handles in open position (indicator plates showing red).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Close gear doors by operating handles on nose and LH main landing gear legs. Install locking caps.

- On the First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE, RH arrows go off.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

4. Doors and Gear Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183 621 lbf.) (Spec. M.F.P.)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad, Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that the landing gear Normal control lever is in NEUTRAL position.

(3) On the centre console, check that the door and gear Emergency control lever is in NEUTRAL position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Position safety barriers.

(7) Make certain that visor is not uplocked.

(8) Under fuselage open access door 151DB and check pressure in Green and Yellow system accumulators according to ambient temperature.

(9) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(10) Check that the following circuit breakers are set.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	B10
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Connect hydraulic ground power unit to Green and Yellow systems.

(12) Remove landing gear and shortening mechanism safety devices.

(13) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

(14) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(15) When gear is uplocked, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down Green hydraulic system.

C. Test

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

(2) On centre console, place landing gear and door Emergency control lever in DOORS position.

(a) The nose gear and main gear doors open and the tail gear extends.

(b) On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE, T and RH arrows illuminate.

(c) On First Officer's instrument panel, the green T arrow illuminates on gears position indicating unit and the corresponding red light goes off.

(3) With doors open and tail gear downlocked, place the door and gear Emergency control lever in WHEELS position.

(a) Nose and main gears extend and downlock.

(b) On First Officer's instrument panel, on gears position indicating unit

- Green NOSE, LH and RH arrows come on.

- Red lights corresponding to green LH, NOSE, RH arrows stay on.

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On First Officer's instrument panel, on gears position indicating unit, amber LH SHORT, UPPER LOCKS and RH SHORT lights are off.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(7) Pressurize Green hydraulic system.

<u>WARNING</u> : MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Nose and main landing gear doors close.

(b) On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE, T and RH arrows go off.

(c) On First Officer's instrument panel, on gears position indicating unit, green LH, NOSE, T and RH arrows remain illuminated.

(9) Carry out a landing gear retraction and extension using the landing gear Normal control lever (Ref. 32-31-00, Adjustment/Test).

D. Close-Up

(1) On First Officer's instrument panel, place landing gear Normal control lever to NEUTRAL position.

(2) Install landing gear and shortening mechanism safety devices.

(3) Shut down and disconnect hydraulic power units.

(4) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(5) Remove safety barriers.

(6) Remove safety stay.

(7) Lower aircraft onto its wheels.

(8) Close access doors.

5. Test of Door and Gear System

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability greater than 81600 daN (183 621 lbf.) (Spec. M.F.P.)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad, Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Safety Barriers	
Dynamometer	
Chronometer	

B. Prepare

(1) Take the precaution described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that the door and gear Emergency control lever is in NEUTRAL position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Install safety stay.

(6) Install safety barriers.

(7) Make certain that the visor is not uplocked.

(8) Under fuselage open access door 151DB and check pressure in Green and Yellow system accumulators according to ambient temperature.

(9) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(10) Check that the following circuit breakers are set.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	B10
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Connect hydraulic ground power unit to Green and Yellow systems.

(12) Remove landing gear and shortening mechanism safety devices.

(13) Pressurize Green Hydraulic system (Ref. 29-11-00, Serviving).

WARNING : MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

(14) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(15) Landing gear uplocked, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

C. Test of Gear and Doors

(1) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) On First Officer's instrument panel, on gears position indicating unit, amber LH SHORT, UPPER LOCKS and RH SHORT lights are on.

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

(3) Install dynamometer on gear and door Emergency control lever.

(4) On centre console, place gear and door Emergency control lever in DOORS position.

(a) Make certain that load at lever is equal to, or less than, 10 daN (22.5 lbf).

(b) Nose and main gear doors open, the tail gear extends.

(b1) Note operation times
- Nose gear door opening : 4 seconds approx.
- Main gear door opening : 8 seconds approx.
- Tail gear extension : 8 seconds approx.

(b2) On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE, T and RH arrows come on.

(b3) On First Officer's instrument panel, on gears position indicating unit, green T arrow comes on and the corresponding red light goes off.

(5) With doors open and tail gear downlocked place landing gear and door Emergency control lever in WHEELS position.

(a) Make certain that load at lever is equal to or less than 10 daN (22.5 lbf).

(b) Nose and main gears extend and downlock.

(b1) Note full extension time of three landing gears 40 ± 5 seconds.

(b2) On First Officer's instrument panel, on gears position indicating unit.

- Amber UPPER LOCKS light goes off.
- Green NOSE, LH and RH arrows come on.
- Amber LH SHORT and RH SHORT lights go off.
- Red lights corresponding to green LH, NOSE and RH arrows remain illuminated.

(6) Remove dynamometer.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Nose and main gear doors close.

(b) On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE, RH arrows go off.

(c) On First Officer's instrument panel, on gears position indicating unit, the green LH, NOSE, T and RH arrows remain illuminated.

(11) Carry out a landing gear retraction and extension using the landing gear Normal control lever (Ref. 32-31-00, Adjustment/Test).

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(14) Install landing gear and shortening mechanism safety devices.

D. Priority Valve Test

RB WARNING: MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES
RB ARE CLEAR.

RB (1) Pressurize Green hydraulic system (Ref. 29-11-00,
RB Servicing).

RB (2) On First Officer's instrument panel, place landing
RB gear Normal control lever in UP position, ensure gear
RB has retracted and doors are closed.

RB (3) Depressurize Green hydraulic system (Ref. 29-11-00,
RB Servicing).

RB (4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

RB (5) On centre console, place landing gear and door Emergency control lever in DOORS position.

RB (6) Using hydraulic ground power unit slowly increase Yellow hydraulic system pressure.

RB (7) Check that main and nose gear doors unlock for a pressure of 180 ± 15 bars (2610 ± 218 psi).

RB (8) Maintain this pressure (Ref. 29-21-00, Servicing).

(a) Main and nose gear doors open and tail gear extends.

RB (9) Reduce pressure and maintain at 150 bars (2175 psi).

RB (10) On centre console, place landing gear and door Emergency control lever in WHEELS position.

(a) Main and nose gears remain uplocked.

RB (11) Increase pressure and maintain at 180 ± 15 bars (2610 ± 218 psi).

(a) Main and nose gears extend and downlock.

RB (12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

RB (13) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

RB (14) Depressurize Yellow hydraulic system using ground
RB hydraulic power unit.

RB (15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

RB (16) On First officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Main and nose gear doors close.

(b) On First Officer's instrument panel, on gears position indicating unit, make certain that green LH, NOSE, T and RH arrows are illuminated.

RB (17) Carry out a landing gear retraction and extension using the landing gear Normal control lever (Ref. 32-31-00, Adjustment/Test).

RB (18) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

RB (19) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

RB (20) Install landing gear and shortening mechanism safety devices.

E. Close-Up

(1) Shut down and disconnect hydraulic ground power units (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect the electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Remove safety barriers.

WARNING: MAKE CERTAIN THAT THE AREA UNDER THE AIRCRAFT IS CLEAR.

(4) Remove safety stay.

(5) Lower the aircraft onto its wheels.

(6) Close access doors.

EMERGENCY EXTENSION - INSPECTION/CHECK

1. Control Cables

A. General

The Emergency extension control system includes 7 x 19 (7 strands of 19 wires) preformed galvanized carbon steel cables.

DIAMETER	TYPE	MATERIAL
1/8" (3.2 mm)	7 x 19	Carbon steel

B. Equipment and Materials

DESCRIPTION	PART NO.
R Special Materials (Ref. 20-30-00, No.124)	
R Cleaning (Ref. 20-30-00, No.469)	
Cleaning (Ref. 20-30-00, No.477)	

C. Visual Inspection

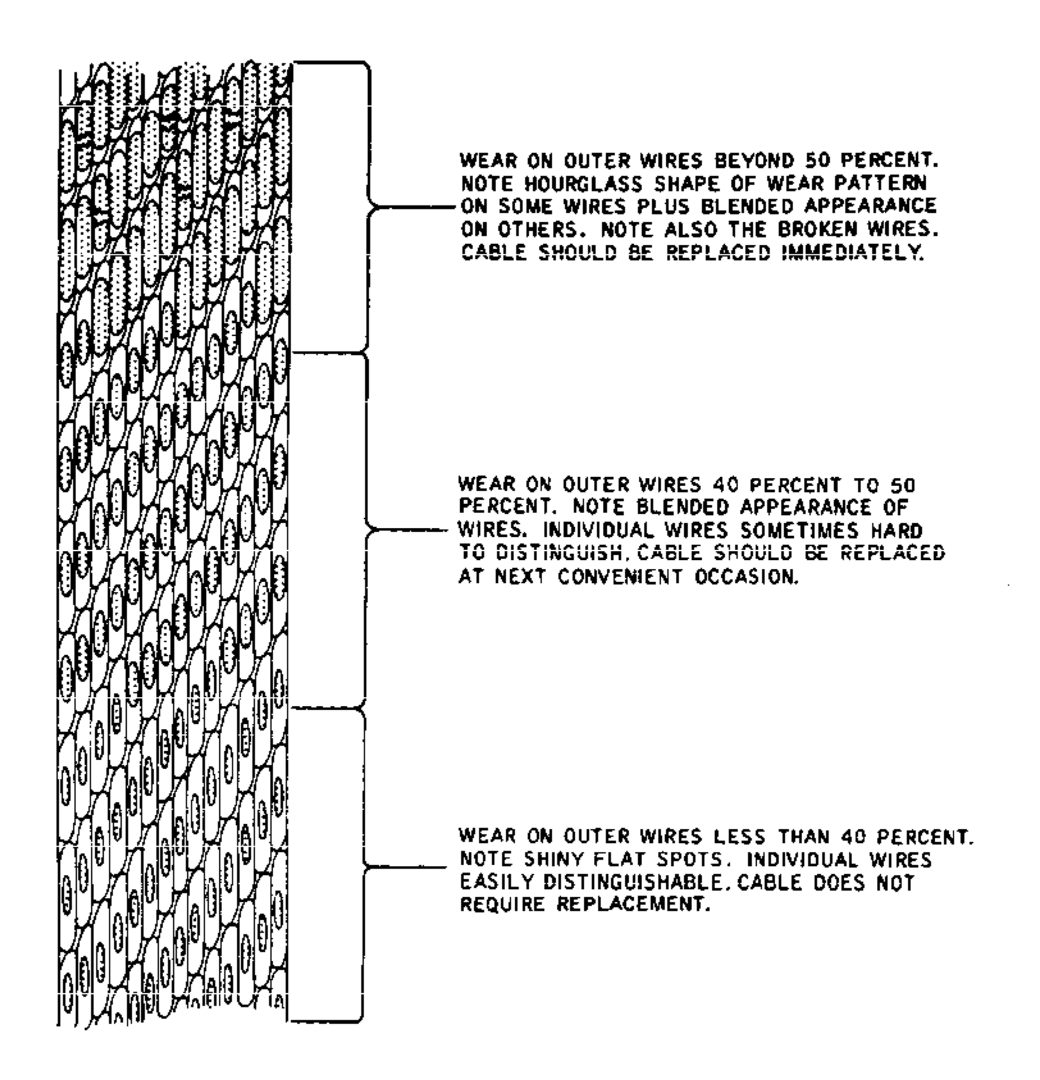
(1) Cable Wear (Ref. Fig. 601)

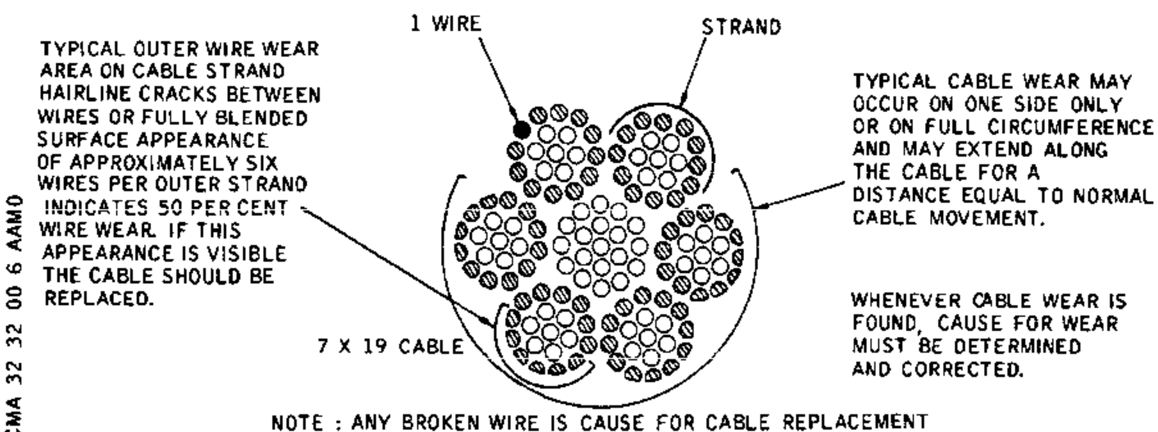
R Check that cables are free from obstruction over
R the full range of travel.
R Check cables for wear and corrosion.

R NOTE : Cables must be inspected throughout their length
R and particularly over the full range of tra-
R vel at points where wear may be expected. Wear
R generally takes place where cables pass through
R fairleads and pressure seals, run round pulleys
R or where changes in direction of the run
R occur.

R Wear limits

R Typical cable wear may occur on one side only or
R on full circumference and may extend along the cable
R for a distance equal to normal cable movement.





NOTE : ANY BROKEN WIRE IS CAUSE FOR CABLE REPLACEMENT

R

Cable Wear
Figure 601

- Wear on cable strand outer wires less than 40 % of wire diameter.
  Note shiny flat spots.
  Individual wires easily distinguishable.
- Wear on outer wires between 40 % and 50 %
  Note blended appearance of wires. Individual wires hard to distinguish.
- Wear on outer wires beyond 50 %
  Note hourglass shape of wear pattern on some wires and blended appearance on others.
  Check for broken wires.

A cable with a broken wire must be replaced.

(2) Corrosion

Check for corrosion especially on cable sections in contact with pulleys, fairleads and pressure seals.

(a) If any surface corrosion is found, carry out a more detailed inspection requiring cable slackening for inspection of inner strands.

(b) Discard the cable if inner strand corrosion is found.

(c) In case of superficial corrosion :

- Clean the cable using a brush or a lint-free cloth soaked with material No.477 or No.469.
- Allow to dry.
- Apply a very light coat of anti-corrosion product No.124 on cable.
- Remove surplus grease on cables ; surplus grease can collet abrasive particles which could deteriorate the cables.

2. Pulleys and Cable Tensioners

A. General

The flight controls incorporate fiber/resin pulleys mounted on bearings and protected by stainless steel deflectors.

B. Check pulleys

Check pulleys and attaching hardware for correct condition ;

- Side play
- Alignment of fixing brackets or mountings

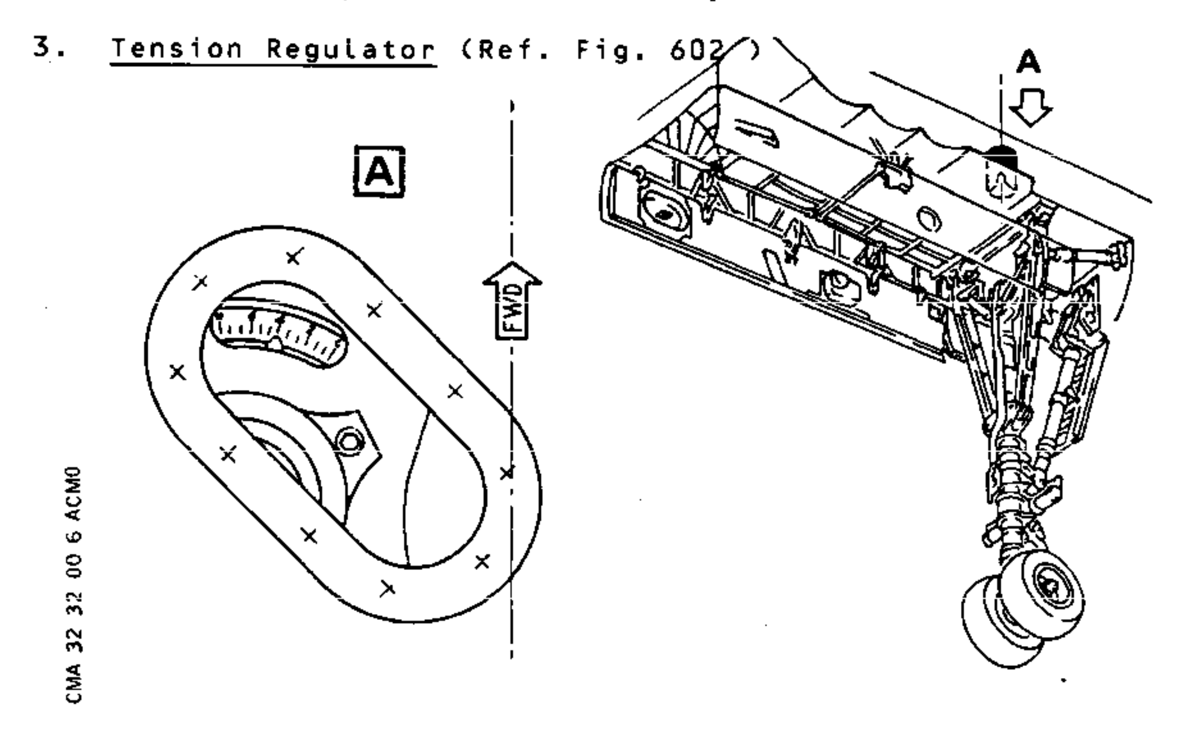
R - Correct safetying
R - Distortion of cable guides or friction between cables
R and cable guides
R - Traces of corrosion

R Check pulleys for freedom of rotation (absence of hard
R spots).

R C. Check Cable Tensioners

R Check that cable tensioners are correctly safetied (lock-
R pins in place) and that they are not obstructed.

3. Tension Regulator (Ref. Fig. 602)



Tension Regulator
Figure 602

On tension regulator make certain that pointer is aligned with centre graduation (No.4) for an ambient temperature of 15°C.

NOTE : With other ambient temperatures, a correction of 0.4 division per 15°C variation must be applied with respect to the reference temperature of 15°C.

R Correction must be made towards the H (hot) mark with temperatures of more than 15°C and towards the C (cold) mark with temperatures below 15°C.

Adjustment is accomplished by rotating the turnbuckles in the appropriate direction.

END OF THIS SECTION

NEXT

EMERGENCY SELECTOR VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The Emergency selector valve ports Yellow hydraulic pressure to the nose and main gear return and depressurization selector valves. The Yellow hydraulic pressure acts on the return and depressurization selector valves to connect the Green hydraulic system to tank return and supply the landing gear door opening and gear extension systems.
The Emergency selector valve is located in the nose gear bay, LH side, at the level of the gear hinge points.

2. Emergency Selector Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Pin Assy - Regulator Rigging	D925363001
Safety Collars - Main Landing	D921317000

DESCRIPTION	PART NO.
Gear Doors - Actuating Cylinder	
Circuit Breaker Safety Clips	
Access Platform 3.97 m (13 ft)	
Lockwire - Dia. 0.80 m (0.032 in.) (Corrosion Resistant Steel)	
Container	
Blanking Plugs/Caps	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Make certain that the visor is not uplocked.

(5) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(8) Remove locking caps and open gear doors by operating handles located on nose and LH main landing gear legs.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down Green hydraulic system (Ref. 29-11-00,

Servicing).

(11) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER		MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G	1	A 6
UC SELECTOR RAISE CONT		G	2	A 7
UC LOWER DOORS OPEN SUP		G	3	A 8
UC SELECTOR LOWER CONT		G	4	A 9

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety sleeves on door actuating jacks.

C. Remove (Ref. Fig. 401)

(1) Mark, disconnect and cap the hydraulic lines.

(2) Disconnect selector valve control rod (3).

(a) Remove cotter pin, remove nut (5) and washer (6).

(b) Remove pin (7).

(3) Cut and remove lockwire and remove bolts (10), washers (9) and remove selector valve.

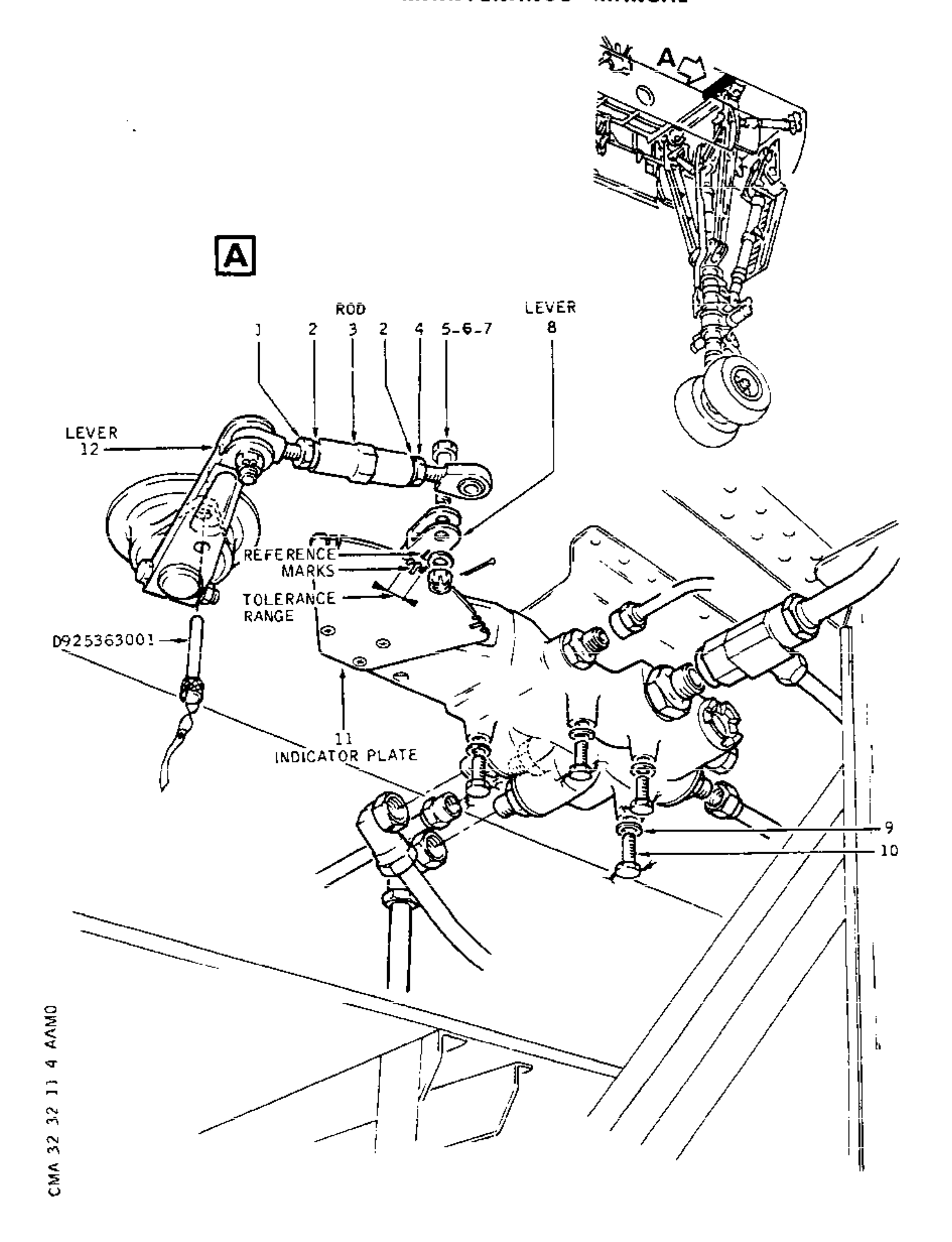
D. Preparation of Replacement Component

NOTE : The replacement Emergency selector valve is filled with hydraulic fluid No.011 (Ref. 20-30-00).

The replacement selector valve is not equipped with all its unions.
On removed selector valve, remove the hydraulic line-to-component unions required and install them on replacement selector valve with new seals.
Wirelock the unions (Ref. 20-21-13).

E. Install

(1) Position selector valve and install using washers (9) and bolts (10).



Emergency Selector Valve
Figure 401

Wirelock bolts (10) in pairs (Ref. 20-21-13).

(2) On centre console, place landing gear and door Emergency control lever in DOORS position.

(3) Rig lever (12) and tension regulator bearing housing using rigging pin D925363001.

(4) Connect rod (3).

(a) Install pin (7), washer (6) and nut (5). Do not tighten nut (5) at this stage.

(b) Make certain that the reference mark on lever (8) is within the tolerance range on indicator plate (11).

(c) If necessary, adjust length of rod (3) as follows :

- Cut and remove lockwire, loosen nuts (1) and (4) and back off lock washers (2).
- Turn rod to achieve required length.
- Position lock washers (2)
- Tighten nuts (1) and (4) and wirelock (Ref. 20-21-13).

(d) Tighten nut (5) and safety with a cotter pin.

(5) Remove rigging pin D925363001.

(6) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(7) Connect hydraulic lines according to marks made during removal.

F. Test

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(2) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(3) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

(4) On centre console, place landing gear and door Emergency control lever in DOORS then WHEELS position.

(5) During this operation check Emergency selector valve for external leakage.

(6) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(7) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove access platform.

(3) Remove safety clips and tags and reset circuit breakers.

(4) Remove safety sleeves from door actuating jacks.

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT THE DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Close gear doors by operating handle located on nose and LH main gear legs. Install locking caps.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(11) Close access doors.

NOSE GEAR RETURN AND DEPRESSURIZATION SELECTOR VALVE REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nose gear and door selector valves as well as the nose gear return and depressurization selector valve are mounted on a base plate located in the nose landing gear bay.
The sealing between the return and depressurization selector valve and the base plate is achieved through spools fitted with seals.

2. Nose Gear Return and Depressurization Valve Selector

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Undercarriage Doors	E925002000
Access Platform 3.220 m (10 ft. 7 in.)	
Container	

DESCRIPTION	PART NO.
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.028 in. (0.70 mm) Corrosion Resistant Steel	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit, energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position

(7) Remove locking cap and open doors by means of operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING: DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS. IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(11) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(12) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(13) Install safety collars on door actuating jacks.

C. Remove

(1) Cut and remove lockwire and remove screws (1) securing selector to base plate. Retain washers (2).

R (2) Remove selector valve (3). Remove spools and discard
R seals and back-up rings.

(3) Blank off base plate ports.

D. Preparation of Replacement Component

NOTE: The replacement selector valve is filled with Product No.011 (Ref. 20-30-00).

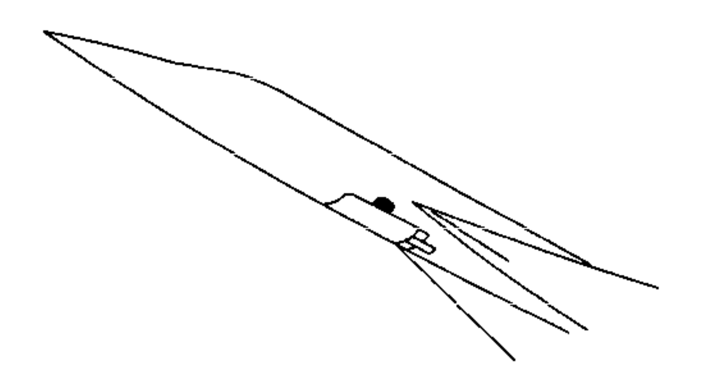
R (1) Make certain that spools are correctly fitted with new
R back-up rings and new seals (Ref. 20-22-16).

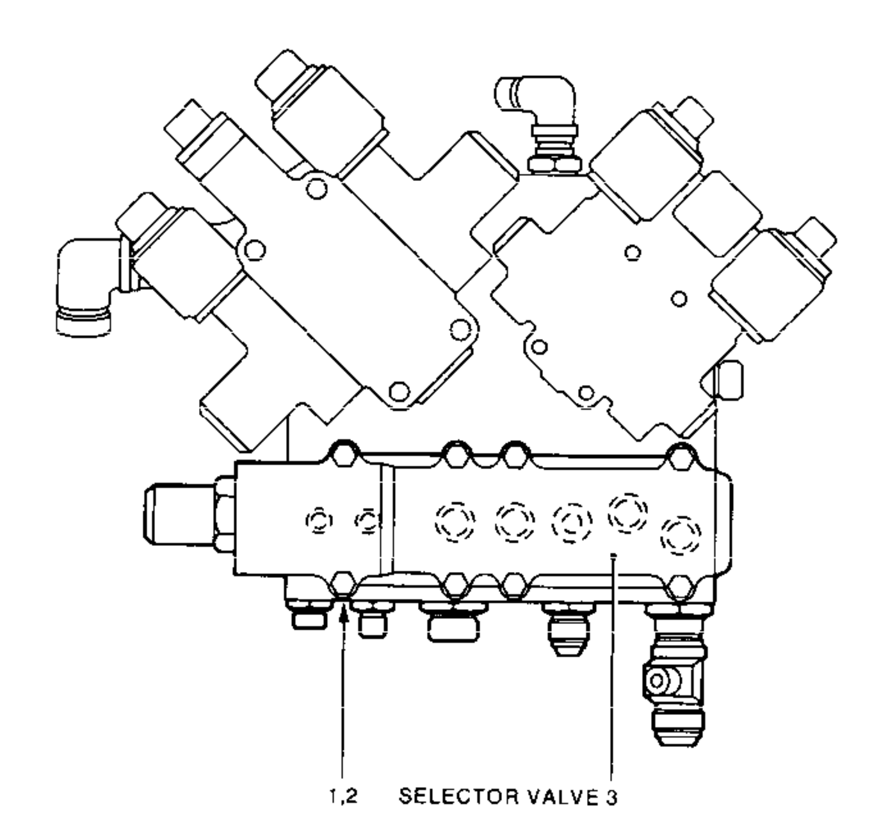
E. Install

(1) Remove plugs from base plate ports.

(2) Install spools fitted with seals in their recesses.

WARNING: THE END OF THE SPOOL BEARING THE MARKING GROOVE MUST BE INSTALLED FACING BASE PLATE.





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R

Nose Gear Return and Depressurization
Selector Valve
Figure 401

(3) Remove blanking plugs, position and install replacement selector valve.

(4) Secure selector valve with screws (1) fitted with washers (2). Tighten screws and safety with lockwire (Ref. 20-21-13).

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(6) Remove container.

(7) Remove safety collar.

(8) Remove access platform.

(9) Remove safety clips and tags and reset circuit breakers.

(10) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(13) Close doors by operating handle located on nose gear leg. Install locking cap.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Test

(1) Carry out an Emergency door opening sequence with aircraft on its wheels (Ref. 32-32-00 paragraph 3., Adjustment/Test).

(2) Carry out a door opening and closing sequence by operating handle located on nose gear leg.

(3) The replacement component shall be thoroughly checked for leakage at the time of the initial pressurization, and also upon completion of tests.

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) De-energize the aircraft electrical network, disconnect electrical ground power unit.

(3) Close access doors.

(4) Remove warning notices.

NOSE GEAR RETURN AND DEPRESSURIZATION SELECTOR VALVE INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The return and depressurization selector valve is installed upstream of the gear and door selectors.

It carries out the following functions during Emergency or Ultimate Emergency gear extension :

- Shuts off Green hydraulic system high pressure delivery to landing gear and door selectors.
- Connects landing gear and door selector valve delivery and return to Yellow hydraulic tank.

2. Nose Gear Return and Depressurization Selector Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor, it not uplocked.

(5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(7) Position safety barriers prohibiting access to gear door travel ranges.

C. Tests

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR DOOR TRAVEL RANGES ARE CLEAR.

(2) On centre console, place landing gear and door Emergency control lever in DOORS position
- Main and nose landing gear main doors open.

(3) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(4) Shut down and depressurize Yellow hydraulic system

and disconnect hydraulic ground power unit (Ref. 29-21-00, Servicing).

(5) On nose and LH main landing gear legs, remove locking caps and place operating handles in open position (indicator plate showing red).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(8) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down and depressurize Green hydraulic system and disconnect hydraulic ground power unit (Ref. 29-11-00, Servicing).

(11) Check fluid level in Green and Yellow hydraulic tanks (Ref. 29-00-00, Inspection/Check).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Remove safety barriers.

MAIN GEAR RETURN AND DEPRESSURIZATION SELECTOR VALVE REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The main landing gear selector valve as well as the associated return and depressurization selector valve are mounted on a base plate located in zone 151 - 152.
The sealing between the return and depressurization selector valve and the base plate is achieved by spools fitted with seals.

2. Main Gear Return and Depressurization Selector Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Container	
Access Platform 3.220 m (10 ft. 7 in.)	
Blanking Plugs/Caps	
Lockwire - Corrosion Resistant Steel dia. 1 mm (0.041 in.)	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph

(2) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, and 29-21-00, Servicing).

(3) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(4) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
HYD GRND CHECK ALT SEL VALVE CONT	15-216	M 626	F22

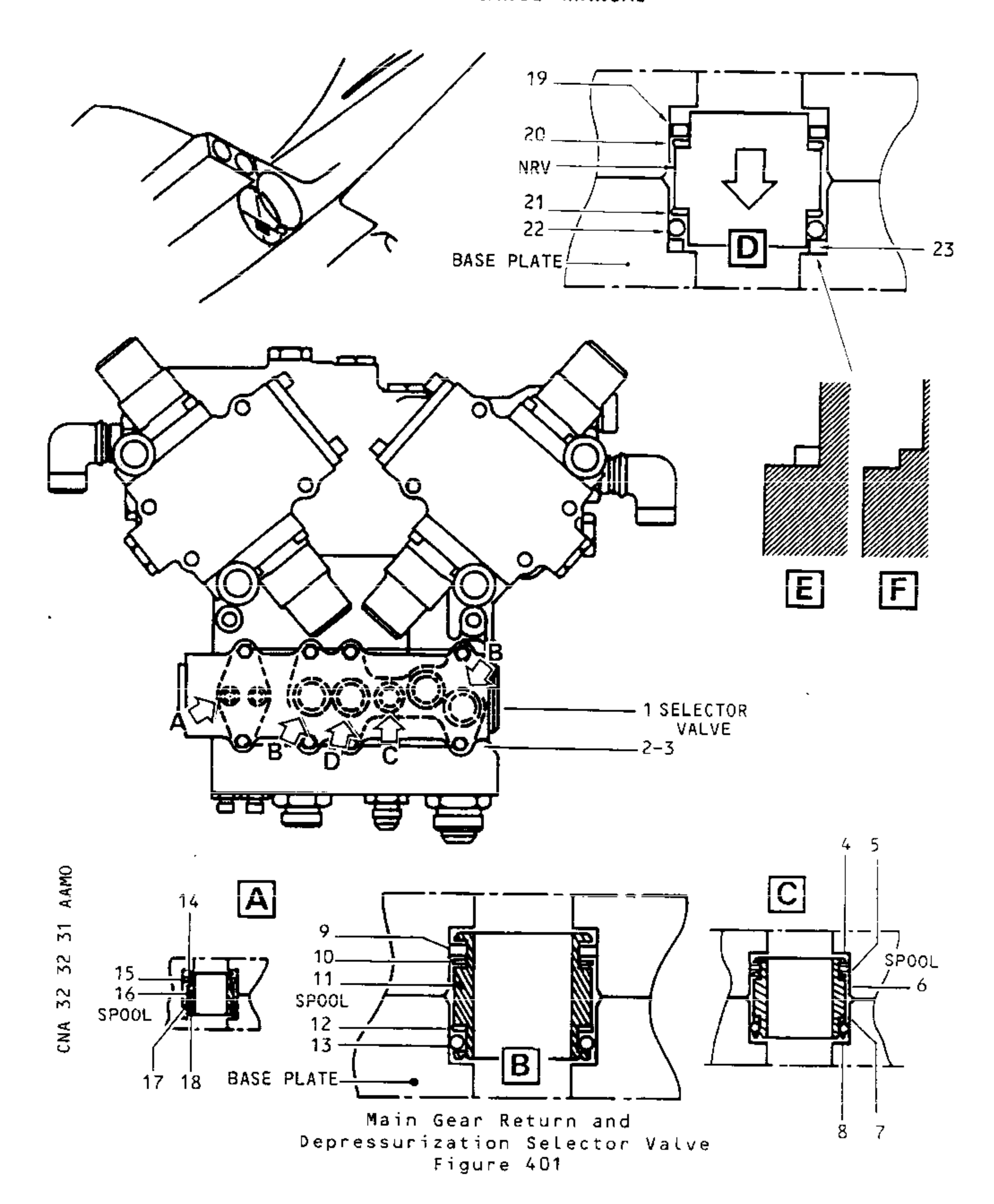
WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 and 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEERS'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

C. Remove

(1) Cut and remove lockwire and remove screws (2) securing selector valve (1) to base plate. Retain washers (3) for reinstallation.

(2) Remove selector valve (1). Discard spools (6) (11) (16) equipped with O-ring seals and back up rings. Retain
R Non Return Valve. Discard seals and back-up rings. Do
R not attempt to remove washer (23) in bore of base plate
R at position D, Fig 401.

(3) Blank off base plate ports.



Main Gear Return and
Depressurization Selector Valve
Figure 401

R

D. Preparation of Replacement Component

RB NOTE: Ensure that replacement selector is filled with
RB Product No.11 (Ref. 20-30-00). This will ensure
RB correct valve operation on emergency extension
RB selection of main landing gear.

Check that replacement spools are correctly equipped with back up rings (5), (7), (10), (12), (15) and (17), O-ring seal (8), (13) and (18), square section seal (4), (9) and (14). The O-ring seal must be installed on end of spool marked by a circular groove.

Check washer (23) is secure in base plate bore at position D, Fig. 401. Fit replacement back-up rings (20) and (21) and seals (19) and (22) to Non Return Valve.

NOTE: Washer (23) is fitted to early standard base plate and is secured in the base plate with Araldite AW106 and Hardener 953U and is part of the base plate assembly, Ref. Fig. 401 (inset E).

Later production base plates will incorporate the washer thickness in the parent metal and can be identified by a double step in the bottom of bore D, Ref. Fig. 401 (insert F).

E. Install

(1) Remove plugs from base plate ports.

(2) Install spools (6), (11) and (16) equipped with seals, in their recesses. Install Non Return Valve equipped with seals in recess D. Fig. 401.

NOTE: The end of the spool bearing the marking must be installed facing the manifold.

(3) Remove blanking plugs, position and install replacement selector valve.

(4) Secure selector valve with screws (2) fitted with washers (3). Torque screws (2) to between 0.6 and 0.7 m.daN (53 and 62 lbf.in.) and safety with lockwire (Ref. 20-21-13).

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(6) Remove container.

(7) Remove safety clip and tag and reset circuit breaker.

(8) Pressurize the Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(9) Remove access platform.

F. Test

(1) Carry out and Emergency door opening sequence with aircraft on its wheels (Ref. 32-32-00, paragraph 3, Adjustment/Test).

(2) Carry out a door opening and closing sequence by operating handle located on LH main landing gear leg.

(3) The replacement component shall be thoroughly checked for leakage at the time of the initial pressurization, and upon completion of tests.

G. Close-up

(1) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) Close access doors.

(3) Remove warning notices.

MAIN GEAR RETURN AND DEPRESSURIZATION SELECTOR VALVE - INSPECTION/CHECK

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The return and depressurization selector valve is installed upstream of the gear and door selectors.

It carries out the following functions during an Emergency or Ultimate Emergency gear extension operation:

- Shuts off Green hydraulic system high pressure delivery to landing gear and door selectors.
- Connects landing gear and door selector delivery and return to Yellow hydraulic tank.

2. Main Gear Return and Depressurization Selector Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical ground power unit	-
Safety barriers	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor, is not uplocked.

(5) Make certain that the following circuit breakers are set.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Position safety barriers prohibiting access to gear and door travel ranges.

C. Test

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(2) On centre console, place landing gear and door Emergency control lever in DOORS position.

- Nose and main landing gear main doors open.

(3) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(4) Shut down and depressurize Yellow hydraulic system

and disconnect hydraulic ground power unit. (Ref. 29-21-00, Servicing).

(5) On nose gear and LH main gear legs, remove locking caps and place operating levers in open position (indicator plate showing red).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(8) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down and depressurize Green hydraulic system and disconnect hydraulic ground power unit (Ref. 29-11-00, Servicing).

(11) Check fluid level in Green and Yellow hydraulic tanks (Ref. 29-00-00, Inspection/Check).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Remove safety barriers.

REGULATOR ASSEMBLY - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The tension regulator is located above the nose gear bay, in front of landing gear hinge points. Its function is to maintain landing gear Emergency extension control cables at a constant tension.

2. Tension Regulator Assembly

A. Equipment and Materials

DESCRIPTION	PART NO.
Safety Sleeve - Nose Landing Gear Doors	E925002000
Electrical Ground Power Unit	
Acces platform 3.97 m (13 ft)	
Pin Assy - Console Pulley Lever Rigging	D925363000
Pin Assy - Regulator Rigging	D925363001

DESCRIPTION	PART NO.
Locking Device For Cable Tension	
Circuit Breaker Safety Clips	
Sealant (Ref. 20-30-00, No.382)	
Lockwire dia. 0.8mm (0.032 in.) (Corrosion Resistant Steel).	

B. Prepare.

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green Hydraulic system (Ref. 29-11-00, Servicing).

(10 Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT	15-215	G 2	A 7
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(11) Install safety collars on door actuating jacks

(12) Remove floor panels : 221 DF, 221 HF, 221 LF, 221 QF, 221 UF, 221 VF.

(13) At zone L 211 remove centre console housing side cover.

C. Remove (Ref. Fig. 401)

(1) Remove regulator cover (1), screw (2), washers (3).

(2) Remove cable guide (5), screw (4).

(3) Slaken regulator control cables :

- Remove lockpin from turnbuckle and rotate the latter until cable end can be disengaged from its recess on the regulator.

(4) In nose landing gear bay, disconnect rod (13) from lever (22) nut (16), washer (17), bolt (12).

(5) Remove lever (22), bolt (18), ressed washer (19), then nut (24), washer (23), bolt (20) with washer (21).

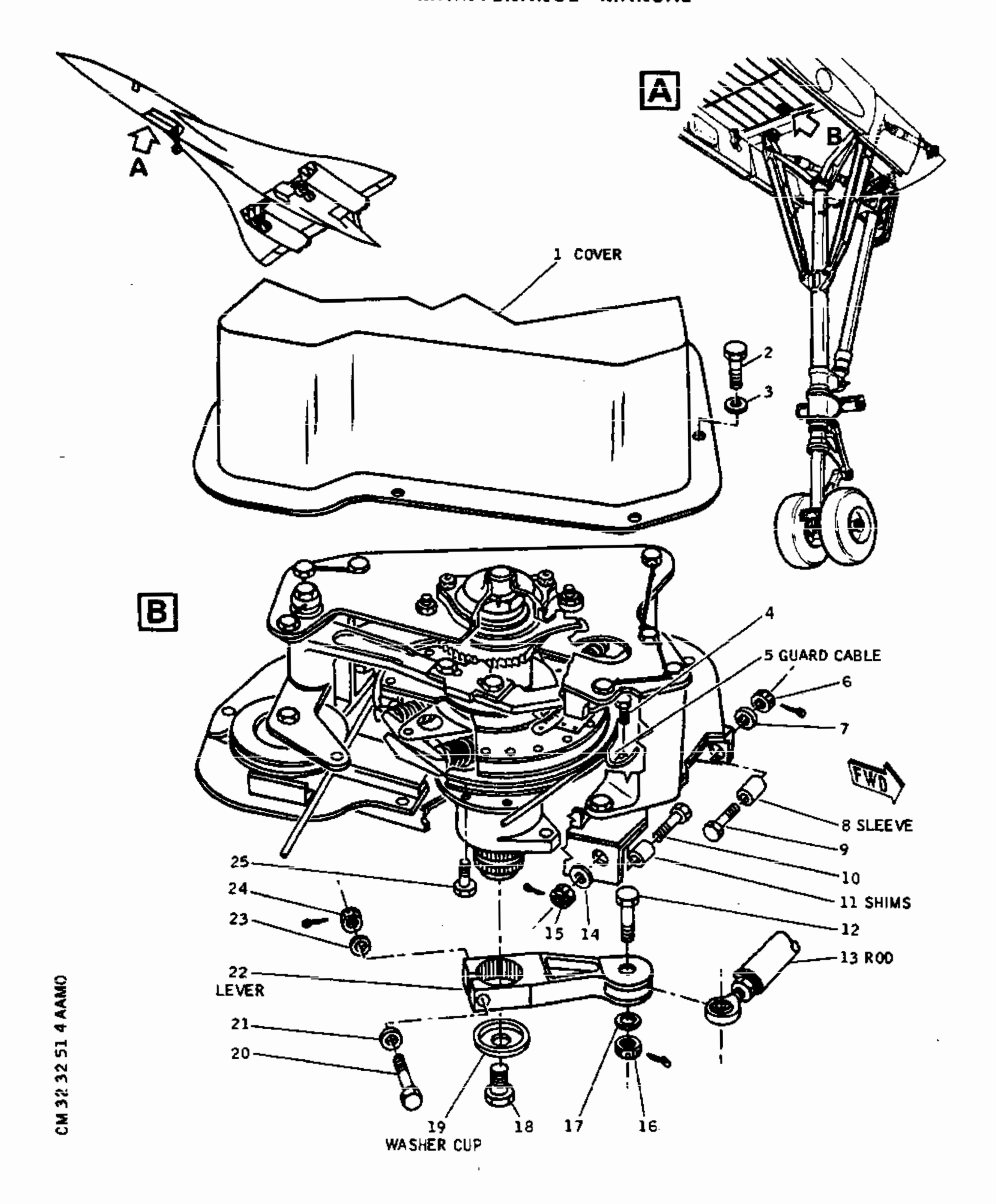
(6) Cut lockwire and remove screws (25).

(7) Separate regulator from aircraft structure ; remove nuts (6), washers (7), bolts (9) and spacers (8) on one side, then nuts (15), washers (14), bolts (10), shims (11) on the other side.

(8) Remove regulator.

D. Preparation of Replacement Component.

(1) On removed regulator install cable guard (5), screws



Tension Regulator Assembly
Figure 401

(4), without safetying screws.

(2) On replacement regulator, remove cable guard (5), screws (4).

E. Install

(1) Coat floor and regulator mating surfaces with jointing compound product No.382 (Ref. 20-22-14).

(2) Install regulator.

(3) Install screws (25) without tightening them.

(4) Position sleeves (8) and install bolts (9), washers (7) nuts (6). Do not tighten nuts at this stage.

(5) Install shims (11) and bolts (10), washers (14), nuts (15). Do not tighten nuts at this stage.

(6) Tighten alternately and progressively nuts (15) and (6) and screws (25).
Torque nuts (6) and (15) to between 12 and 15 lbf.in (0.135 and 0.169 m.daN). Safety nuts with cotter pin.
Wirelock screws (25) (Ref. 20-21-13).

(7) In nose landing gear bay, install lever (22), recessed washer (19), screw (18), then bolt (20) with washer (21), washer (23), nut (24).
Torque screw (18) to between 35 and 43 lbf.in (0.395 and 0.490 m.daN).
Safety nut (24) with cotter pin and wirelock screw (18) (Ref. 20-21-13).

(8) Connect control rod to emergency selector. Install bolt (12), washer (17), nut (16).
Safety, nut (16) with cotter pin.

(9) Install cable ends in their recesses on tension regulator. Tighten cables lightly.

(10) Install cable guard (5), screw (4).

F. Adjustment

(1) Carry out landing gear and doors Emergency control adjustment between centre console and emergency selector valve. (Ref. 32-32-00, Adjustment/Test).

(2) Before closing access doors and panels, carry out a double inspection of work performed and area affected

as per instructions detailed in 05-55-11.

G. Close-Up

(1) Install regulator cover (1), screw (2), washer (3), and centre console side cover. Safety screw with lockwire (Ref. 20-21-13).

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Install floor panels.

(4) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(5) On centre console, make certain that landing gear and doors Emergency control lever is in NEUTRAL position.

(6) Remove safety collars from door actuating jacks.

(7) Remove safety clips and tags and reset circuit breakers

(8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(10) Close doors by operating handle located on nose gear leg. Install locking cap.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(13) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(14) Close access doors.

ULTIMATE EMERGENCY EXTENSION - DESCRIPTION AND OPERATION

1. General

In the event of failure of both the Normal and Emergency landing gear extension systems, the Captain has a third and ultimate means of gear extension which is essentially mechanical. A handwheel serves for nose gear and door uplock release and a handle and knurled knob for main gear and door uplock release. Upon uplock release of doors and gear, extension is achieved under gravity (free-fall action) together with the action of aerodynamic forces. The doors are designed to open under loads applied by the gear.

2. Description

A. The main landing gear uplock release controls located under the passenger compartment floor (access door 233BF) include:

R (1) A knurled knob operating the following units through a
R system of rods and bellcranks :

R (a) A triple valve (3418) installed in the LH main
R gear bay.

(b) A triple valve with depressurization valve (4303)
R installed in the RH main gear bay.

(2) A control lever (removable) enables the following
R units to be operated through a system of rods and bellcranks.

(a) Two main gear door uplocks (0408, 0409).

(b) Two main gear uplocks (3406, 3407).

(3) Pneumatic assistance consisting of a valve assembly with Q.A.D. (self-sealing) connector.

B. The nose landing gear uplock control located under the passenger compartment floor (access door 221RF) includes :

(1) A handwheel (removable) operating the following units through a system of universal joints, bellcranks and rods.

(a) Nose gear depressurization valve (1017).

(b) Dual valve (0512).

(c) Four nose gear door uplocks (3506, 3507, 3508, 3509).

(d) Nose gear uplock (3504).

NOTE : All these units are located in the nose landing gear bay.

3. Uplock - Main Landing Gear Door (0408, 0409) (Ref. Fig. 001)

A. General

Two identical uplocks ensure gear door uplocking in gear uplocked or downlocked configuration. Doors are held in this position until the uplock release order is given.
In each uplock a mechanical spring-loaded hook achieves
R door uplocking.
An actuating cylinder containing two tandem-mounted pistons serves for hydraulic release of the hook.
In Normal operation one of the pistons is operated by the Green hydraulic system.
In Emergency operation the other piston is operated by the Yellow hydraulic system.
An independent manual control serves for uplock release during Ultimate Emergency door opening.
A microswitch on the uplock is actuated and indicator light alerts crew when uplock fails to operate.

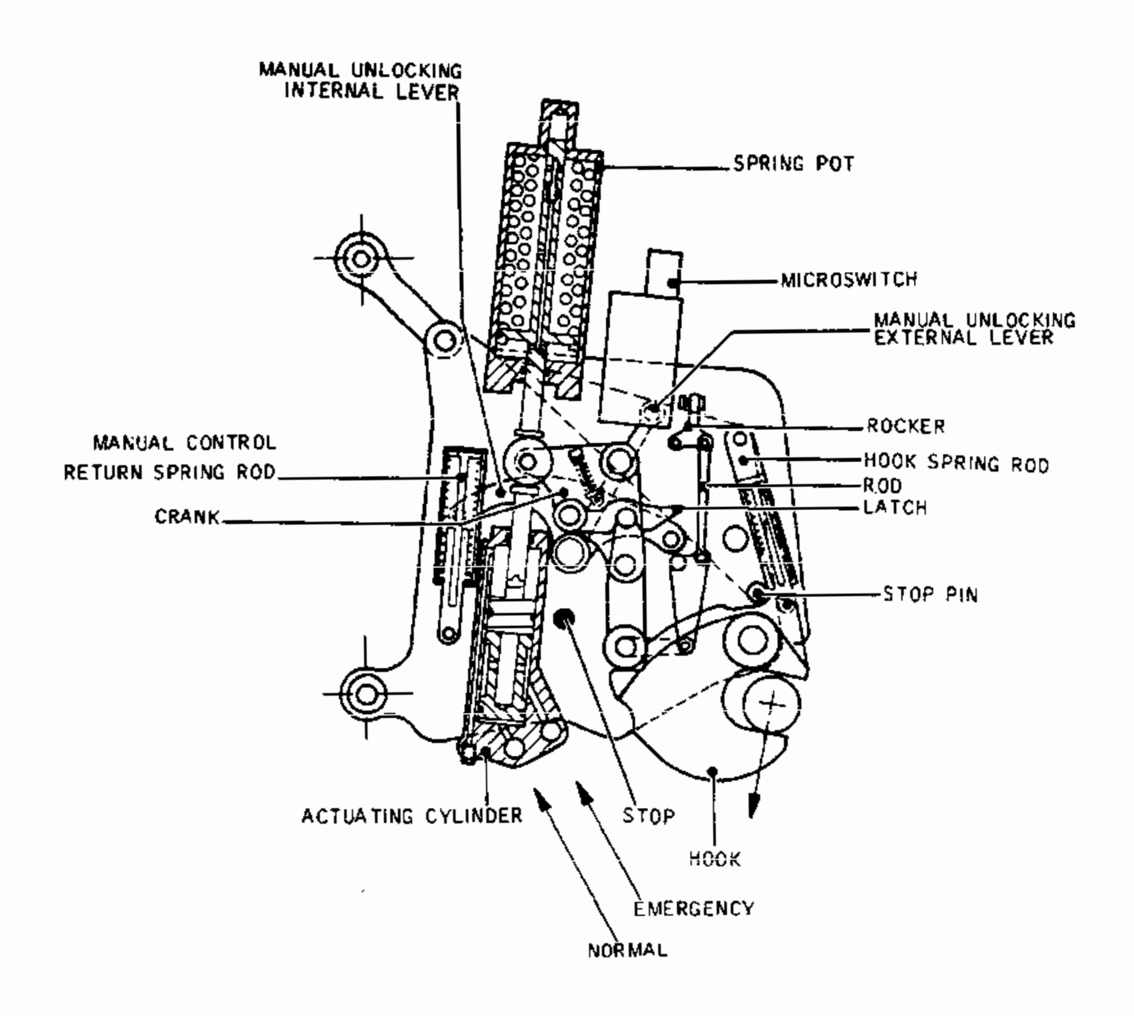
B. Description

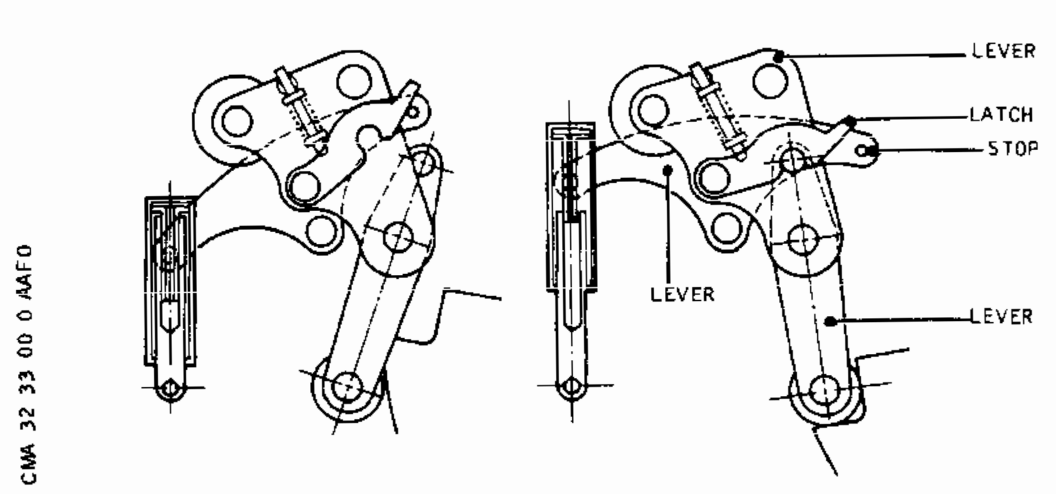
The uplock unit includes :

(1) An actuating cylinder containing two tandem-mounted pistons : One operated by Green pressure (Normal operation) and the other by Yellow pressure (Emergency operation).

(2) A spring pot provides return pressure for the actuating cylinder. This pot includes a shock damper which absorbs shocks during uplock release.

(3) The hook uplock system consists of a bellcrank, fitted with a roller, comprising two non-aligned levers and a latch. This system ensures hook uplock and hook manual release in Ultimate Emergency operation.
During Normal and Emergency operation the latch locks the two levers together.
During Ultimate Emergency operation the latch is released thus unlocking the levers.





R

Main Landing Gear Door Uplock
Figure 001

(4) A hook maintained in released position by a spring rod. In uplocked position the bellcrank roller bears against the upper part of the hook.

(5) A splined shaft whose outer end connects to the Ultimate Emergency manual control lever. The inner end of this shaft is connected to a spring-rod loaded lever. This spring rod enables the Ultimate Emergency system to be reset to neutral.

(6) A rod and rocker mechanism connected to the bellcrank actuates a microswitch.

C. Operation

(1) Uplock Release

The outer manual control lever rotates the associated inner lever. One end of the inner lever compresses the spring rod and the other end by means of a stop lifts the latch.
Once the latch is lifted the two bellcrank levers are disconnected and are moved out of alignment under the weight of the door together with the action of the spring rod. The bellcrank roller is freed from the uplock hook. The hook is maintained in released position by the associated spring rod. Movement of the bellcrank causes the rocker to rotate and free the microswitch plunger. The microswitch then operates the uplock-hook-released indicating circuit.

(2) Internal Resetting

Internal resetting of the uplock must be performed after Ultimate Emergency operation. The actuating cylinder powered by either the Green or Yellow hydraulic system moves the bellcrank. The bellcrank moves the associated lever up to the stop. At the end of rotation the bellcrank causes the lever to lift the latch which is reset under spring action. The internal system is thus reset.
The spring rod attached to the end of the manual internal uplock release lever serves to return the external control mechanism to neutral.

4. Operation

The pistons in metering valves (4010, 4011) are maintained in Emergency position by a spring. In this position the return
R from actuating cylinders (3402, 3403) is ported to triple valve
R (3418) and triple valve with depressurization valve (4303)

thus preventing hydraulic locking of the actuating cylinders (residual pressure).

A. Main Landing Gears
(Ref. Fig.002 and 003)

Two controls under door 233BF, one actuated by a removable lever, the other by a knurled knob, permit the following operations through the medium of rods and cranks :

R - Opening of the main gear depressurization valve and venting of the triple valves.
R - Mechanical uplock release of main gear and doors.

(1) Pressure relief and venting to atmosphere

The first control (knurled knob) opens :

(a) Triple valve with depressurization valve (4303).
This latter controls movement of the piston in
R return and depressurization selector (4012) which
cuts off the Green system supply to landing gear and door selectors (G27) and (G30).
However, to avoid a hydraulic lock, the same
R piston valve ports selector (G27) and (G30)
R Green supply and return to Yellow tank return.
This installation also allows venting of the annular chambers of actuating jacks (3402-3404-3410-3420).
R The depressurization valve incorporated in
assembly (4303) is actuated before the triple valves.

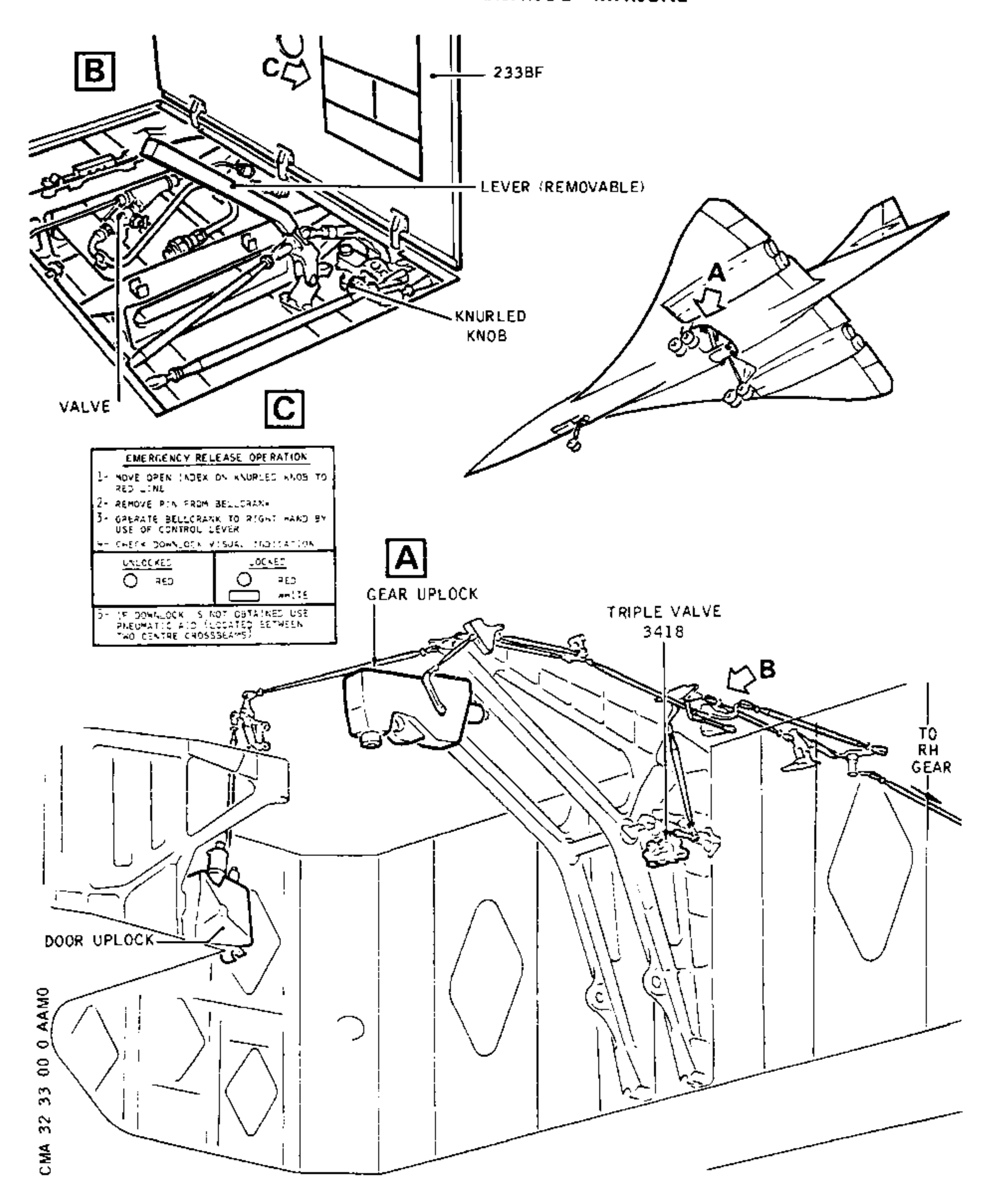
(b) Triple valve (3418) for venting of annular chambers of jacks (3403-3405-3411-3413-3421).

(2) Uplock release of the main gear and doors and extension of the main gear and opening of the gear doors.

The second control (removable lever) enables opening of doors and extension of landing gear to be achieved.

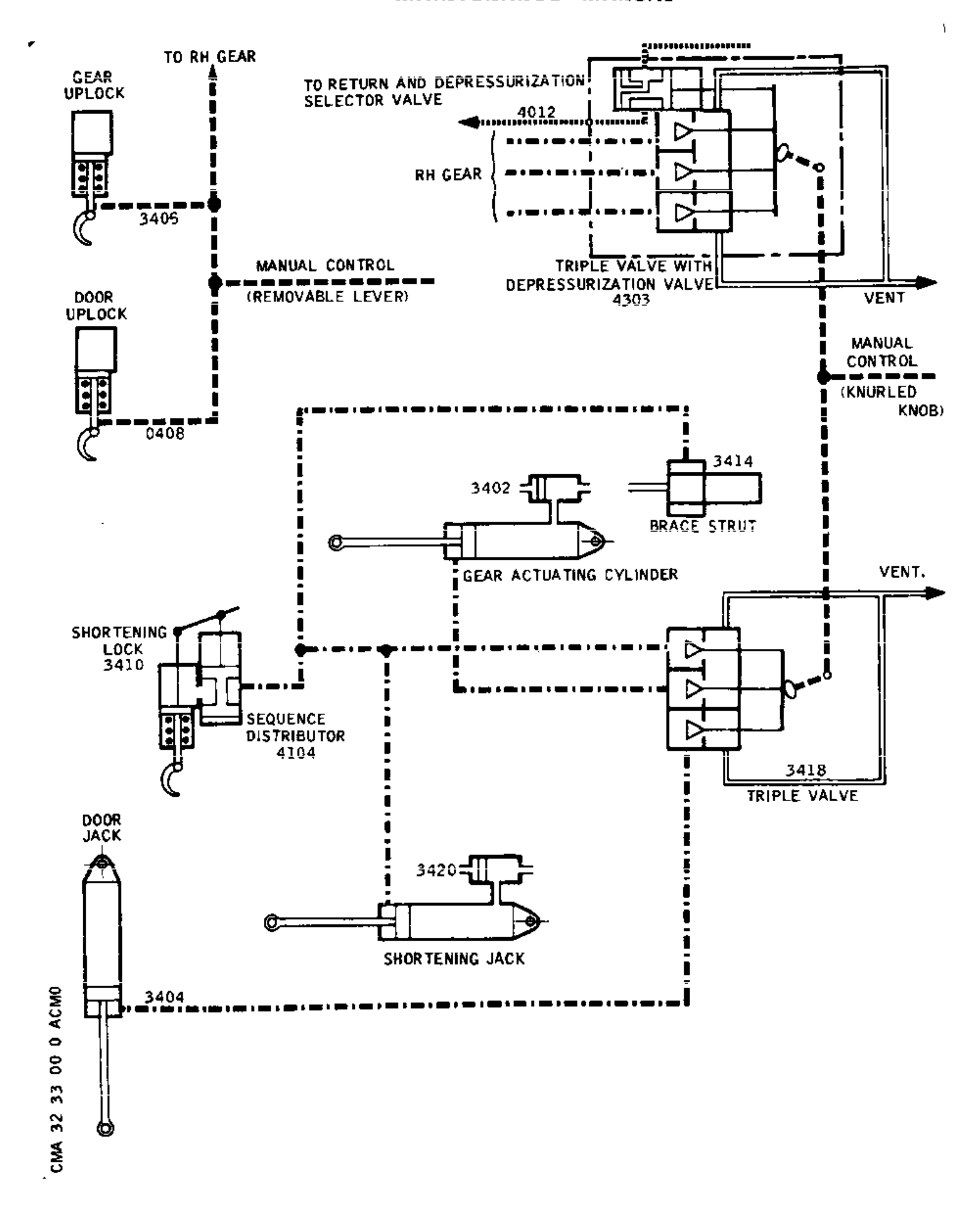
The triple venting valves allow the landing gear to extend and doors to open under action of gravity (free-fall action) and aerodynamic forces until mechanically locked down.
The landing gear doors remain open.

(3) In Ultimate Emergency main gear downlocking can be assisted pneumatically in the event that gear fails to downlock under free-fall action.



Main Gear Manual Uplock Release System
Figure 002

R



Main Gears
Mechanical Uplock Release Venting System
Figure 003

A valve assembly and lines with Q.A.D. (self-sealing) connector, located at the manual control enables tank pressurization air to be ported to each drag strut.

Resetting of these two controls is assisted by spring rods incorporated in the triple valve control and in the main gear and main gear door uplocks.

B. Nose Gear

R (Ref. Fig. 004)

R (Ref. Fig. 005)

R After SB 32-088 For A/C 001-007,

R (Ref. Fig. 006)

A handwheel located under door 221RF, operating a system of rods, universal joints and cranks serves to accomplish the following :

- Opening of the depressurization valve and venting of the nose gear dual valve
- Mechanical uplock release of nose gear and doors.

(1) Pressure Relief, Venting, Door Uplock Release

The following sequences are accomplished during initial rotation of the handwheel :

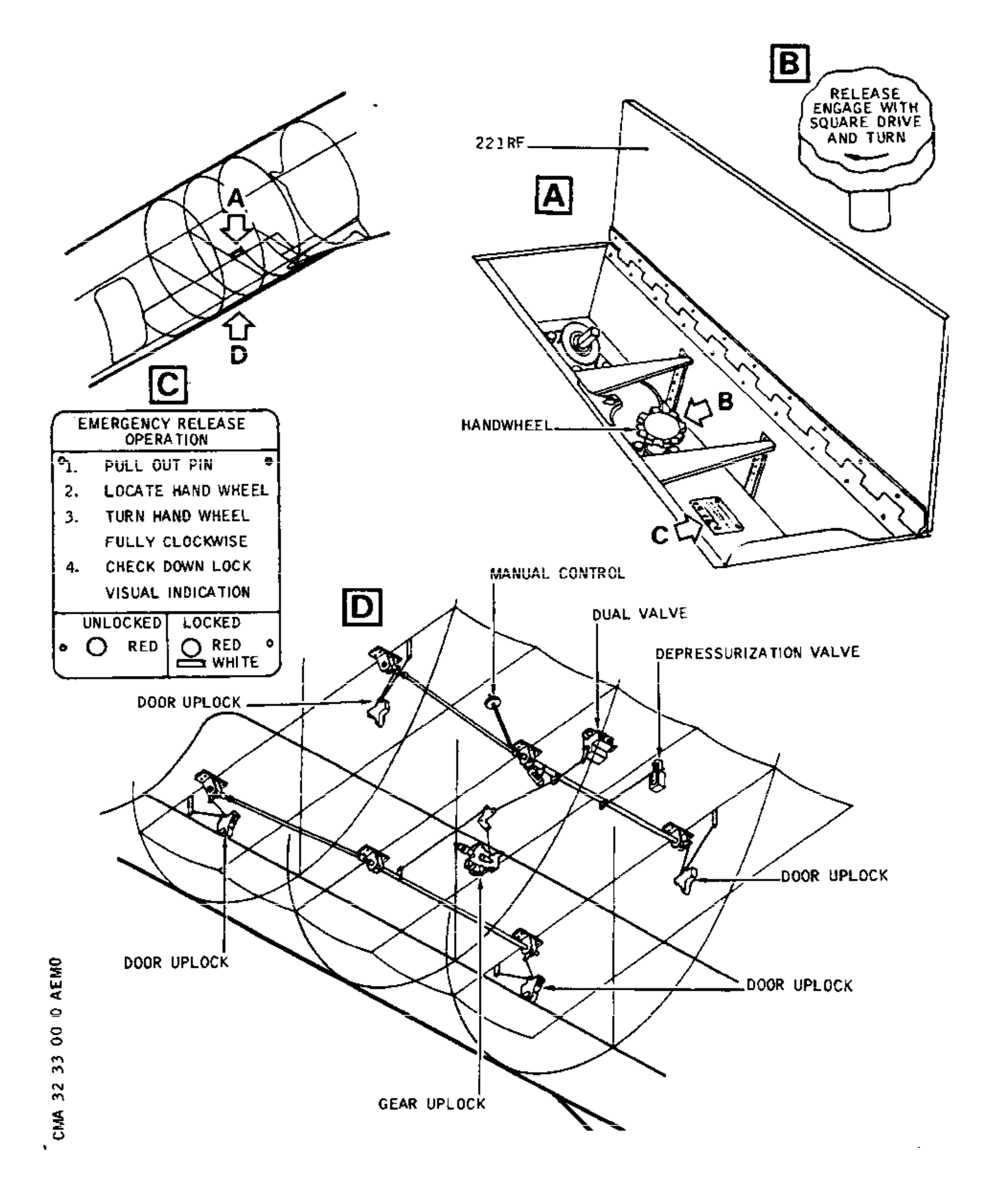
(a) Opening of depressurization valve (1017) which controls operation of return and depressurization valve (4014). This results in Green supply to gear and gear door selectors (G26), (G25) being cut off and Green return and supply pressure to these selectors being ported to the Yellow hydraulic tank.

(b) Opening of nose gear Ultimate Emergency extension dual valve (0512) for venting of jacks (3500, 3501, 3513, 3502, 3503), annular chamber return.

(c) Uplock release of doors.

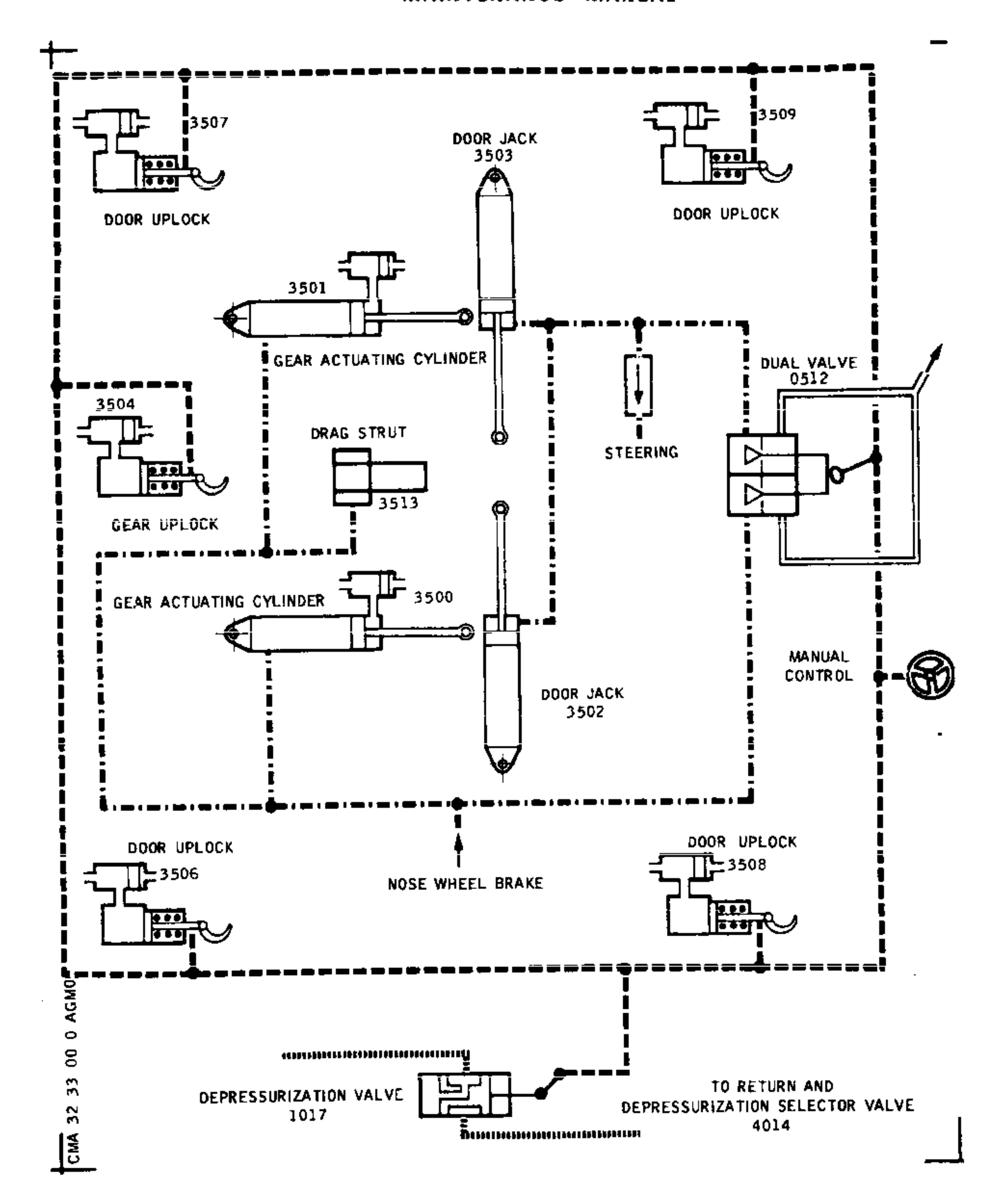
(2) Uplock Release and Extension of Nose Gear

During the second and ultimate stage of handwheel rotation, gear uplock release is achieved.
Gear extends under gravity (free-fall) action and under action of aerodynamic forces.
As in the case of the main gear, depressurization valve (1017) is operated prior to actuation of Ulti-



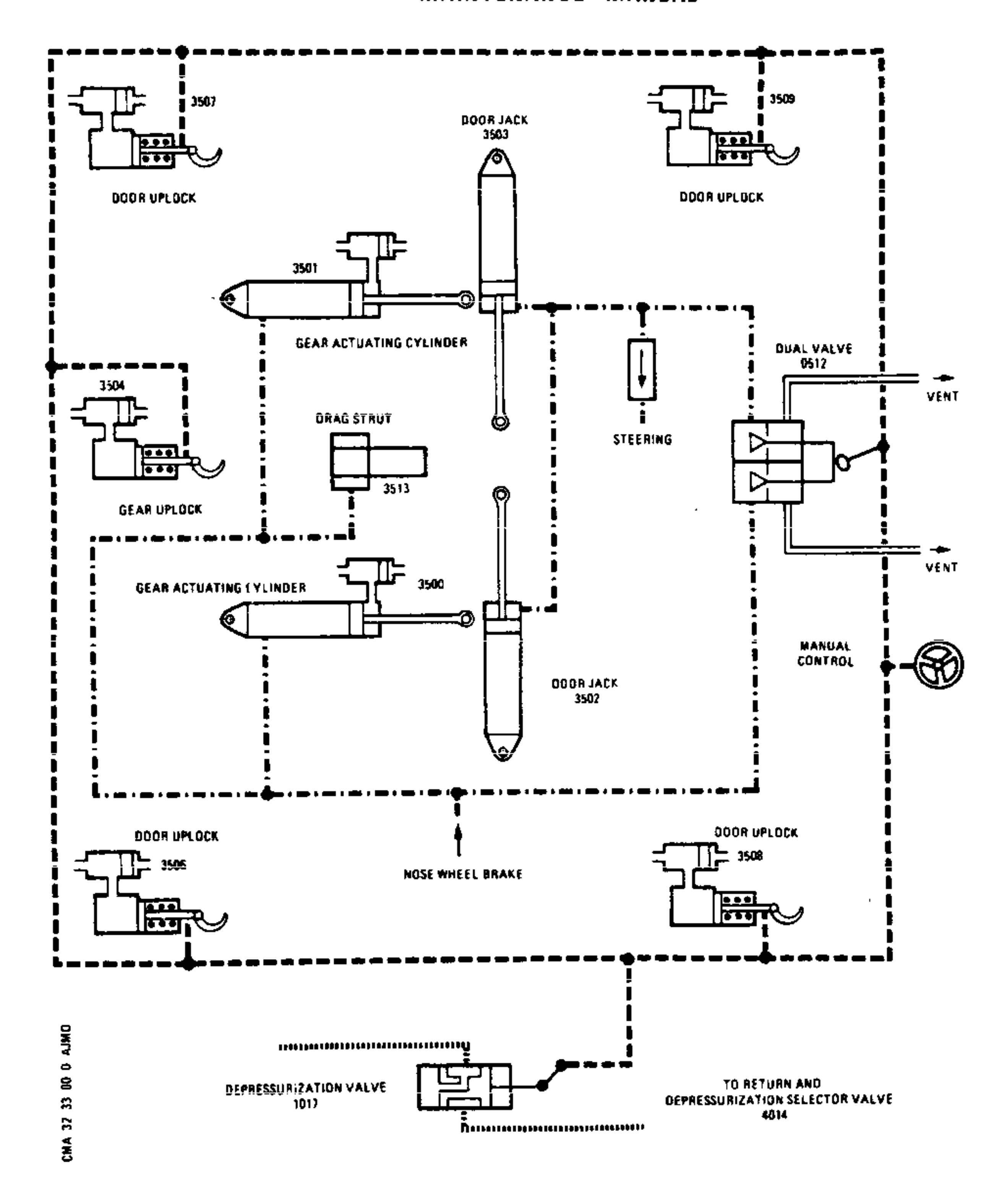
R

Nose Gear - Manual Uplock Release System
Figure 004



Nose Gear - Uplock Release Venting System
Figure 005

R



Nose Gear - Uplock Release Venting System
Figure 006

R

mate Emergency extension dual valve (0512).
Resetting of the control is accomplished by rotating the handwheel to its initial position.

C. Resetting of Systems
(Ref. Fig.003 and 005)

(1) The systems must be reset to normal operational condition after Ultimate Emergency extension.

Resetting consists in returning hooks of uplocks (3406, 3407, 0408, 0409, 3506, 3507, 3508, 3509, 3504) to fully released position and in resetting the internal mechanical system of each uplock.

(2) After a test/training Ultimate Emergency extension, to retract the landing gear it is necessary to successively :

(a) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(b) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(c) Reposition nose landing gear Ultimate Emergency controls using handwheel.

(d) Reposition main landing gear Ultimate Emergency controls using lever (removable) and knurled knob.

(e) Place landing gear Emergency control lever in WHEELS position.
(Automatic internal resetting of main and nose gear uplocks and extension of tail landing gear).

(f) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(g) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

Confirmation of "doors open" configuration and retraction of landing gear. During this operation the level in the Yellow hydraulic tank drops.

ULTIMATE EMERGENCY EXTENSION - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Main Landing Gear Ground Door Opening Test

B. Nose Landing Gear Ground Door Opening Test

C. Landing Gear and Door Functional Test

D. Landing Gear Ultimate Emergency Extension Mechanical Control Adjustment

2. Main Landing Gear Ground Door Opening Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH398E
Drainage Equipment	D924170100
Hydraulic Fluid Containers	

DESCRIPTION	PART NO.
Snapwire 0.50 mm (0.020 in.)	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH UC WEIGHT SW "B" SYS SUP	3-213	G 294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(8) Connect hydraulic ground power units to Green and Yellow hydraulic systems.

WARNING : DO NOT PRESSURIZE GREEN AND YELLOW HYDRAULIC SYSTEMS.

(9) Connect drainage equipment D924170100.

(10) Install hydraulic fluid containers under zones 525 and 625.

(11) Position safety barriers prohibiting access to landing gear door travel ranges.

(12) Depressurize Yellow and Green hydraulic systems (Ref. 29-21-00, Servicing and 29-11-00, Servicing).

C. Test

(1) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(2) On centre console, place landing gear and door Emergency control lever in DOORS position.

(3) Open access door 233BF.

(4) Fully unscrew the knurled knob controlling the triple valves.

(5) Remove locking pin from bellcrank.

(6) Insert the actuating lever into the bellcrank.

(7) Tilt the actuating lever to the RH side up to the mechanical stop.

(a) Main landing gear door uplocks are released.

(b) On First Officer's instrument panel, on gears position indicating unit, red warning lights corresponding to the green LH and RH arrows illuminate.

(c) Manually push open doors.

The return fluid from landing gear door actuating jacks is vented through the triple valves.

D. Close-Up

(1) On First Officer's instrument panel, place the landing gear Normal control lever in NEUTRAL position.

(2) On centre console, place the landing gear and door Emergency control lever in NEUTRAL position.

(3) Restore the main landing gear mechanical uplock release system to original configuration.

(a) Rotate the bellcrank to the LH side by means of actuating lever.

(b) Install locking pin in bellcrank.

(c) Screw the knurled knob controlling the triple valves, fully home.

(d) Safety the knurled knob and rigging pin with snapwire (Ref. 20-26-13) and seal.

(4) Check that landing gear and door uplock hooks are fully opened.

(5) Pressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On centre console, place landing gear and door Emergency control lever in WHEELS position.

(a) The nose landing gear doors open.

(b) On First Officer's instrument panel, on gears position indicating unit, red warning light corresponding to green NOSE arrow illuminates.

(c) The door and landing gear uplocks are automatically reset.

(7) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(8) On nose and LH main landing gear legs, remove locking caps and place operating handles in open position (indicator plates showing red).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(10) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

- On First Officer's instrument panel, on gears posi-sition indicating unit, red lights corresponding to green LH, NOSE and RH arrows extinguish.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Shut down and disconnect hydraulic ground power units.

(13) De-energize the aircraft electrical network and dis-connect electrical ground power unit.

(14) Remove hydraulic fluid containers.

(15) Remove drainage equipment D924170100.

(16) Not applicable

(17) Replenish hydraulic tanks (Ref. 12-12-29).

(18) Clean the rear oxygen charging panel, (Ref. 35-11-00, Cleaning/Painting) and all areas contaminated with Oronite M2V fluid.

(19) Close access doors.

(20) Remove safety barriers.

3. Nose Landing Gear Ground Door Opening Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Drainage Equipment	D924170100
Hydraulic Fluid Container	
Snapwire 0.50 mm (0.020 in.)	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Make certain that following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH UC WEIGHT SW "B" SYS SUP	3-213	G 294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(8) Connect hydraulic ground power units to Green and Yellow hydraulic systems.

WARNING: DO NOT PRESSURIZE GREEN AND YELLOW HYDRAULIC SYSTEMS.

(9) Connect drainage equipment D924170100.

(10) Install fluid container under zone 127.

(11) Position safety barriers prohibiting access to landing gear door travel ranges.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

C. Test

(1) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(2) On centre console, place landing gear and door Emergency control lever in DOORS position.

(3) Open access door 221RF.

(4) Remove locking pin.

(5) Install control wheel on the unlocking control shaft end.

R (6) Actuate the control wheel slowly until the nose
R landing gear doors unlock.

(a) At the beginning of the manoeuvre, the dual vent valve opens.

(b) On First Officer's instrument panel, on gears position indicating unit, red warning light corresponding to the green NOSE arrow illuminates.

(7) Manually push open doors.

(a) The return fluid from the landing gear door actuating jacks is vented through the dual valve.

D. Close-Up

(1) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(2) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(3) Restore the nose landing gear mechanical uplock release system to original configuration.

(a) Rotate handwheel fully anti-clockwise then rotate clockwise not more than 90° to enable locking pin to be installed freely. Remove the wheel and install it on its bracket.

(b) Install the locking pin.

(c) Safety the locking pin with snapwire (Ref. 20-26-13) and seal.

(4) Check that landing gear door uplock hooks are locked open.

(5) Pressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On centre console, place landing gear and door Emergency control lever in DOORS position.

(a) Main landing gear doors open.

(b) On First Officer's instrument panel, on gears position indicating unit, red warning lights, corresponding to green LH and RH arrows illuminate.

(c) The door and landing gear uplocks are automatically reset.

(7) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(8) On nose and LH main landing gear legs, remove locking caps and place operating handles in open position (indicator plates showing red).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(10) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

- On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to green LH, NOSE and RH arrows extinguish.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Shut down and disconnect hydraulic ground power units.

(13) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(14) Remove hydraulic fluid container.

(15) Remove drainage equipment D924170100.

(16) Not applicable

(17) Replenish hydraulic tanks (Ref. 12-12-29).

(18) Clean rear oxygen charging panel, (Ref. 35-11-00, Cleaning/Painting) and all areas contaminated with Oronite M2V fluid.

(19) Close access doors.

(20) Remove safety barriers.

4. Landing Gear and Door Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack, Lifting Capability greater than 81600 daN (183,621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad-Nose	D925370000
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Safety Stay	-
Electrical Ground Power Unit	-
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Safety Barriers	-
Dynamometer 0 to 1100 daN (0 to 2500 lb)	-
Compressed Air Supply : 20 bars (290 psi)	-
Air Hydraulic Test Set	-
Drainage Equipment	D924170100
R Hydraulic Fluid Containers	-
R Webbing Straps	-
Snapwire 0.50 mm (0.020 in)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Install safety stay.

R (6) Open the nose landing gear doors (Ref. 32-00-00, Servicing). Install webbing straps (to be used to pull the nose landing gear doors open later). Close the nose landing gear doors (Ref. 32-00-00, Servicing).

R (7) Connect the drainage equipment D924170100.

R (8) Install the waste hydraulic fluid drain containers under the hydraulic drain points in zones 127, 525 and 625.

R (9) Install safety barriers.

R (10) Make certain that visor is not uplocked.

R (11) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

R (12) Make certain that following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	D 8

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

R (13) Connect hydraulic ground power units to Green and Yellow hydraulic systems.

R (14) Remove landing gear and shortening mechanism safety devices.

R (15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

R (16) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

R (17) When the landing gear is retracted, place landing gear Normal control lever in NEUTRAL position.

R
B NOTE: Do not shut down or depressurize the Green
B hydraulic system. Free fall lowering of the
B landing gear should be carried out with the
B Green hydraulic system pressurized.

C. Main Landing Gear and Door Functional Test

(1) Open access door 233BF.

(2) Fully unscrew knurled knob controlling triple valves.

(3) Remove pin from bellcrank.

(4) Insert operating lever into bellcrank.

WARNING: MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR.

(5) Tilt the operating lever to the RH side up to mechanical stop.

(a) Check that main landing gear and doors unlock.

(b) On First Officer's instrument panel, on gears position indicating unit, red warning lights corresponding to green LH and RH arrows illuminate.

(c) Check that main landing gear legs lock.

On gears position indicating unit, green LH and RH arrows illuminate.

(6) If a main landing gear leg does not downlock:

INTENTIONALLY BLANK

(a) Remove protective cap from corresponding brace strut line. Connect external compressed air supply.

RB NOTE : If the aircraft pneumatic system is used,
RB ensure the flexible hose is stowed below
RB the isolation value on completion of test.
Ref. Fig 601 and 602.

(b) Progressively apply air pressure to brace strut. Check that the corresponding landing gear leg locks at a pressure inferior or equal to 8 bars (116 psi).

B Alternatively pressurize the brace strut to 65
B p.s.i. from the aircraft pneumatic system, and
B apply a side load of up to 672 lbs. to the landing
B gear strut at about the strut/bogie beampivot
B point.

(c) Disconnect external compressed air supply.

(d) Install protective cap on main landing gear brace strut line connection.

(7) Check on visual indicator that main landing gear legs are downlocked. (Ref. 32-61-00, Adjustment/Test).

D. Nose Landing Gear and Door Functional Test.

(1) Open access door 221RF.

(2) Remove locking pin.

(3) Install handwheel on the unlocking device control shaft end.

WARNING : MAKE CERTAIN THAT DOOR AND GEAR TRAVEL RANGES ARE CLEAR DURING OPERATION OF NOSE GEAR ULTIMATE EMERGENCY EXTENSION.

(4) Actuate handwheel slowly until four door uplocks unlock . Stop rotating handwheel to prevent release of nose landing gear.

(a) At the beginning of the manoeuvre the dual vent valve opens.

(b) All four doorlock releases can be audibly heard to release separately by the operator.

(c) On First Officer's instrument panel, on gears position indicating unit, red warning light corresponding to green NOSE arrow illuminates.

(d) The doors will have opened to approximately 60 degrees.

R (5) Using webbing straps manually pull doors back to limit of door jack travel and hold back doors in this position during nose gear free fall.

WARNING: MAKE CERTAIN THAT DOORS FULLY OPEN BEFORE RELEASING GEAR. THE OPERATORS REQUIRED TO HOLD THE NOSE GEAR DOORS OPEN, SHOULD BE POSITIONED FORWARD OF THE NOSE LANDING GEAR DOORS AND HOLD DOORS IN AREA AS INDICATED AT FIG. 501.

CARE MUST BE TAKEN TO ENSURE THAT HANDS ARE CLEAR OF NOSE GEAR TRAVEL RANGE.

(6) Actuate handwheel slowly until nose landing gear unlocks, and free falls into down position.

(a) Check that nose landing gear downlocks.

(b) On gears position indicating unit, the green NOSE arrow illuminates.

B (7) Following confirmation of the nose and main gears
B having locked down, place the landing gear Normal
RB control lever to the DOWN position. Remove webbing
R straps.

B (8) If nose landing gear does not downlock:

(a) Connect a dynamometer at the level of the towing fitting located on the nose landing gear.

(b) Apply a force in landing gear extension direction.

(c) Note the force applied in order to lock the nose landing gear. This force should not exceed 550 lbf (249 Kgf).

E. Restore System to Normal Operating Condition

(1) Restore the main landing gear mechanical uplock release system to original configuration.

(a) Rotate the bellcrank to the LH side by means of operating lever.

(b) Install locking pin in bellcrank.

(c) Screw the knurled knob controlling the triple valves, fully home.

(d) Safety the knurled knob and rigging pin with snapwire (Ref. 20-26-13) and seal.

(e) Install operating lever onto its stowage bracket.

(2) Restore the nose landing gear mechanical uplock release system to original configuration.

(a) Rotate handwheel fully anti-clockwise then rotate clockwise not more than 90° to enable locking pin to be installed freely.
Remove the wheel and install it on its bracket.

(b) Install locking pin.

(c) Safety locking pin with snapwire (Ref. 20-26-13) and seal.

(3) Check that door and landing gear uplock hooks are fully open.

RB (4) On First Officer's instrument panel, place the landing
RB gear Normal control lever in NEUTRAL position.

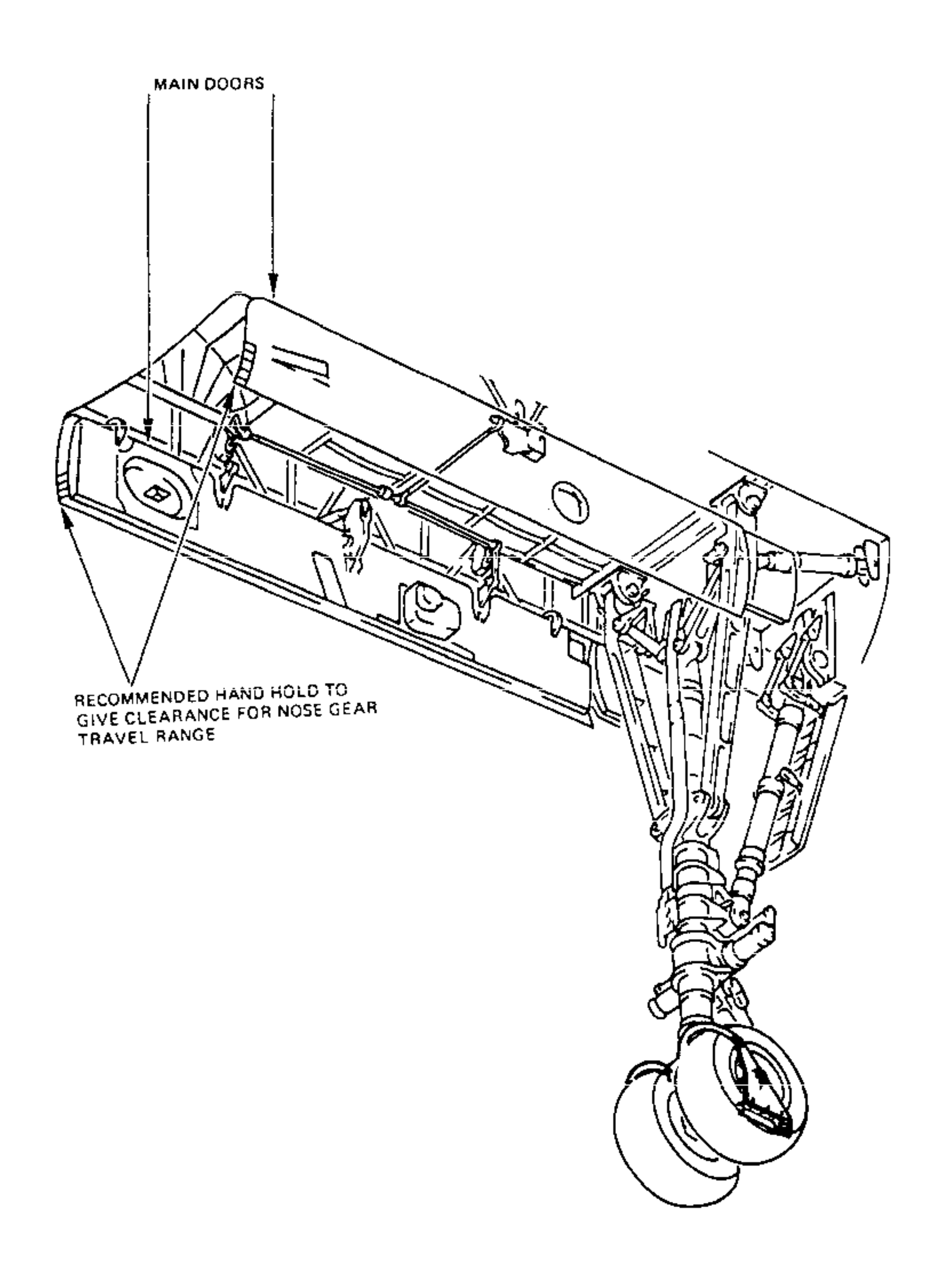
(5) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(6) Make certain that visor is not uplocked.

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) On nose and LH main landing gear legs, remove locking caps and place operating handles in open position (indicator plates showing red).



Nose Gear and Doors
Figure 501

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

NOTE: Gear doors move fully open and tail gear extends. On First Officer's instrument panel, green T arrow illuminates. Amber LH SHORT, UPPER LOCKS and RH SHORT indicator lights are off.

(10) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(12) On centre console, place landing gear and door Emergency control lever successively in DOORS then WHEELS position.
This operation resets uplocks.

(13) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(14) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) On First Officer's instrument panel, make certain that landing gear Normal control lever is in DOWN position.

(17) Close gear doors by operating handles located on nose gear and LH main landing gear legs. Install locking caps. On First Officer's instrument panel, on gears position indicating unit, red lights corresponding to Green LH, NOSE and RH arrows extinguish.

RB (18) These operations (1) to (17) restore shuttle valves to
RB initial configuration.

(19) Carry out a gear retraction and extension sequence to check gear operation (Ref. 32-31-00, Adjustment/Test).

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Close-Up

(1) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated. (Gears downlocked).

(2) Install landing gear and shortening mechanism safety devices.

(3) Replenish Green and Yellow hydraulic tanks (Ref. 12-12-29).

(4) Shut down and disconnect hydraulic ground power units.

(5) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(6) Remove hydraulic fluid containers.

(7) Remove drainage equipment D924170100.

(8) Remove safety stay.

<u>WARNING</u> : MAKE CERTAIN THAT AREA UNDER AIRCRAFT IS CLEAR.

(9) Lower the aircraft onto its wheels.

(10) Clean rear oxygen charging panel, (Ref. 35-11-00, Cleaning/Painting) and all areas contaminated with Oronite M2V fluid.

(11) Not applicable

(12) Close access doors.

(13) Remove safety barriers.

5. Landing Gear Ultimate Emergency Extension Mechanical Control Adjustment

A. Equipment and Materials

DESCRIPTION	REFERENCE
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.22 m (10 ft. 7 in.)	
Warning Notice	
Snapwire 0.50 mm (0.020 in.)	
Adjustment Equipment - Nose Landing Gear Dual Cock Control	E920150000
Rigging Pins - Set - Main Landing Gear Ultimate Emergency Unlocking Control	E920126000
Rigging Pins - Main Landing Gear Ultimate Emergency Control Linkage	E920158000
Safety Collars - Main Landing Gear Doors - Actuating Cylinder	D921317000
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position safety barriers prohibiting access to landing gear door travel ranges.

(3) On First Officer's instrument panel, check that landing gear NORMAL control lever is in NEUTRAL position.

(4) Make certain that the visor is not uplocked.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Pressurize Green Hydraulic System (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR

(7) On First Officer's instrument panel, place landing gear NORMAL control lever in DOWN position.

(8) Remove locking caps and open gear doors by operating handles located on nose and LH main landing gear legs.

(9) On First Officer's instrument panel, place landing gear NORMAL control lever in NEUTRAL position.

(10) Shut down and depressurize Green Hydraulic System (29-11-00, Servicing).

(11) Place warning notice in flight compartment.

(12) Depressurize Green and Blue Hydraulic Systems (Ref. 29-11-00 and 29-12-00, Servicing).

(13) Install safety collars on door actuating jacks.

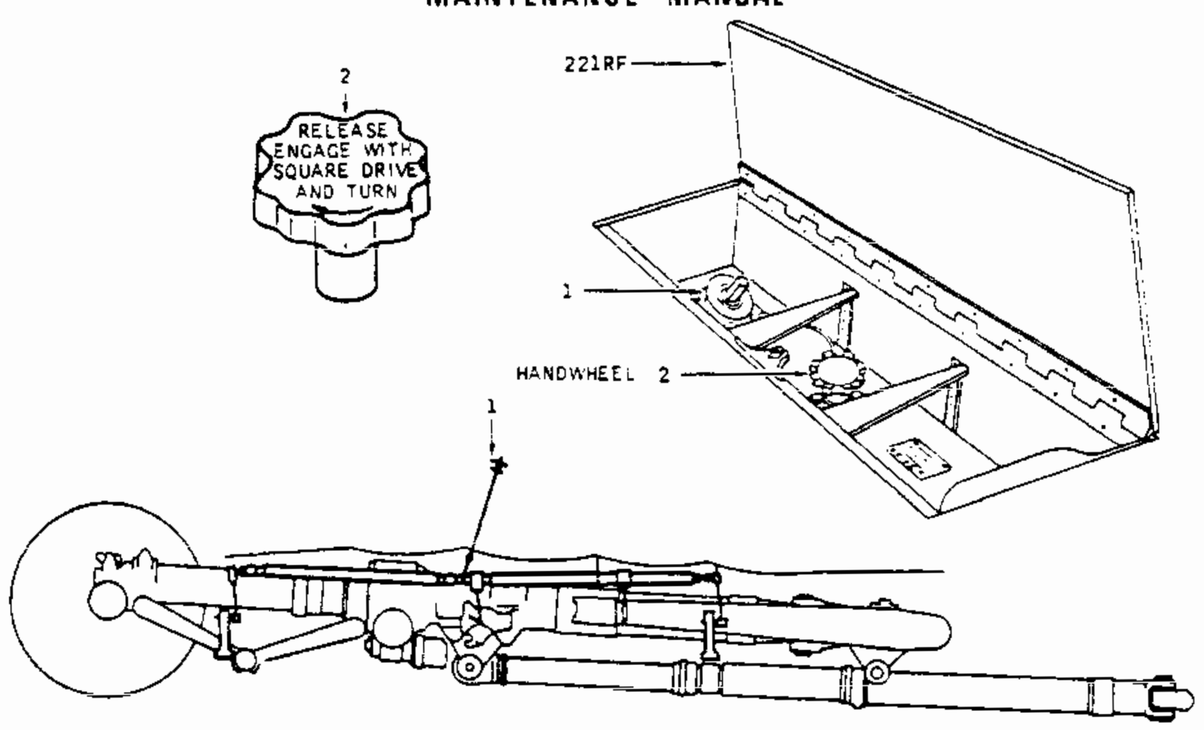
(14) Open access doors 221 RF and 233 BF.

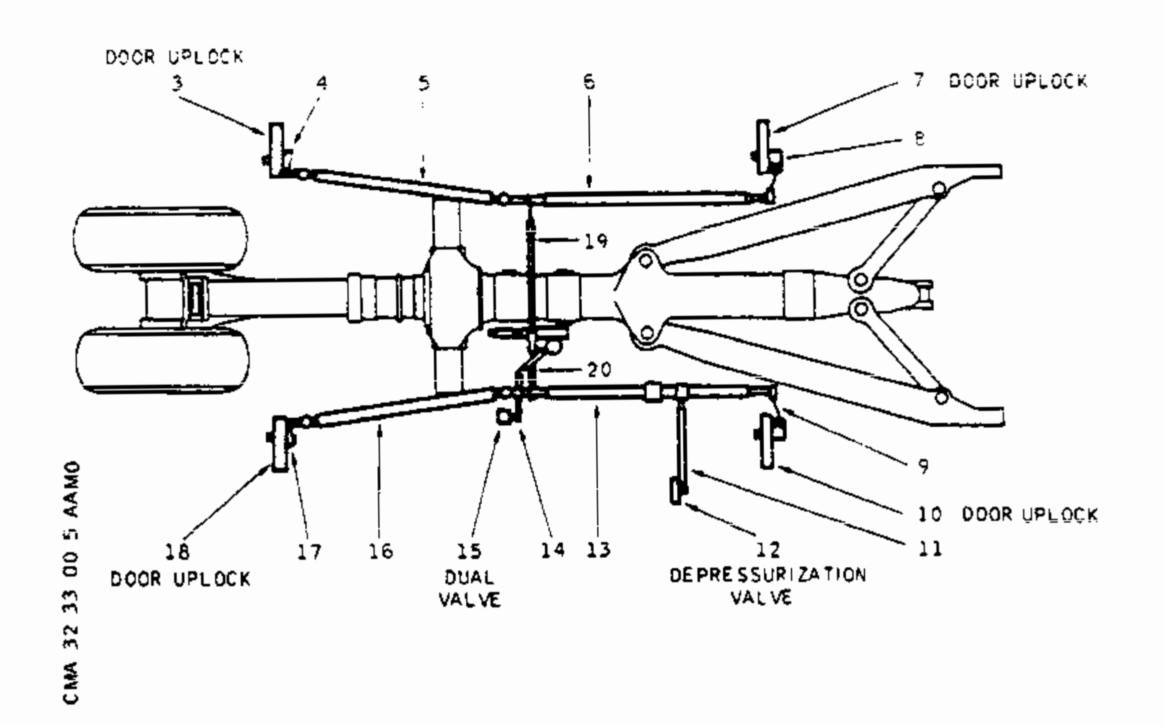
C. Nose Gear and Door Ultimate Emergency Extension
R Mechanical Control Adjustment(Ref. Fig. 501A and 502)

NOTE : Before carrying out the following adjustments make certain that the main landing gear doors are correctly adjusted (Ref. 32-22-13, Adjustment/Test) and that door uplock hooks are correctly positioned and adjusted (Ref. 32-31-62, Adjustment/Test). Make certain that position markers are aligned on torque tubes (13) and (16), and on torque tubes (6) and (5).

(1) In flight compartment, engage handwheel (2) on drive shaft (1) and remove snapwire and locking pin. Rotate handwheel anti-clockwise fully home.

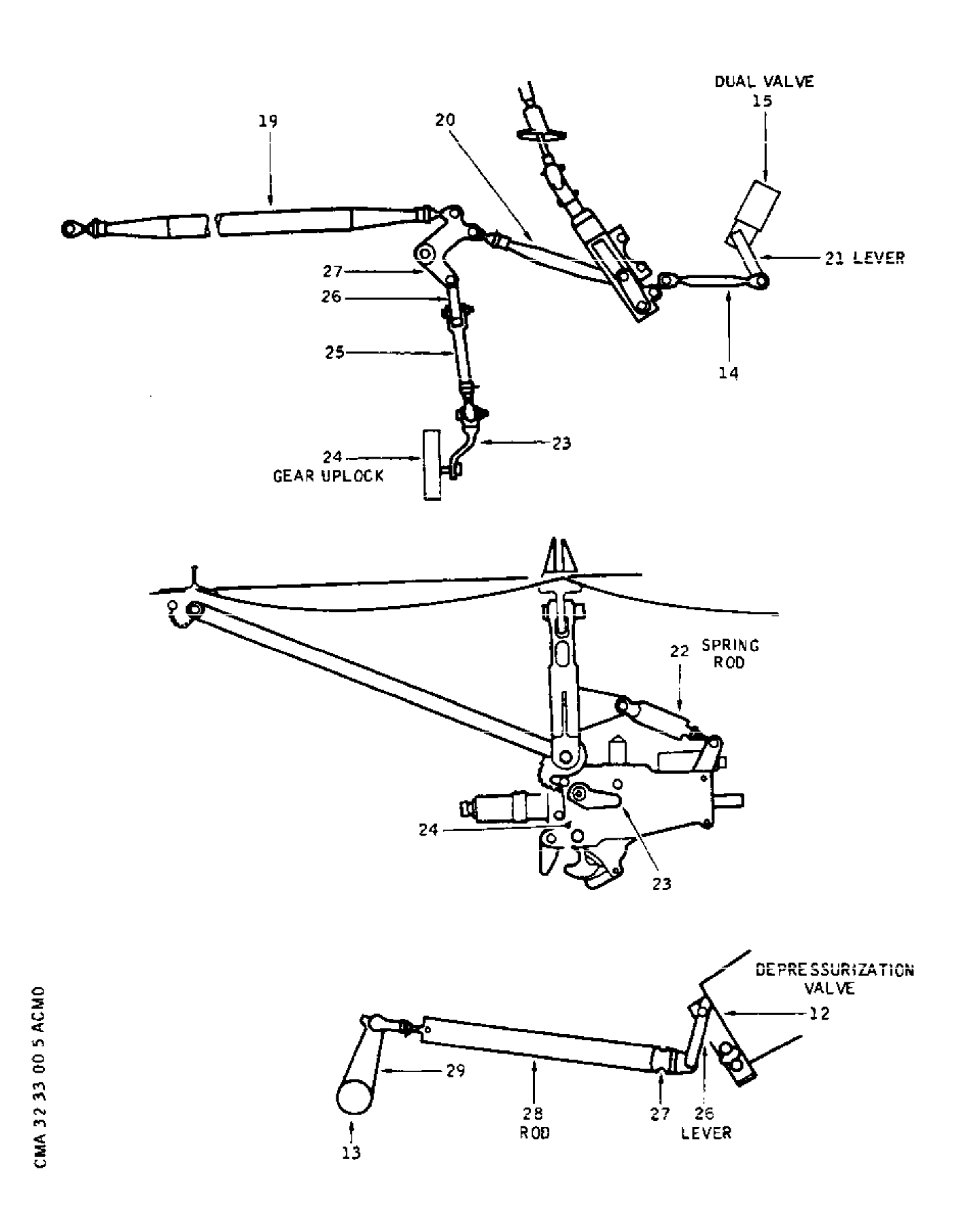
(2) Check that nominal length of rods (19) and (20) is





Nose Gear and Door Ultimate Emergency Uplock Release
Control - Schematic
Figure 501A

R



Nose Gear Ultimate Emergency Uplock Release Assembly Detail
Figure 502

respectively between 23.040 and 23.060 in. (585.215 and 585.723 mm) and between 9.525 and 9.545 in. (241.935 and 242.443 mm).
Adjust length as required, and tighten locknuts on adjustable end-fittings, and wirelock (Ref. 20-21-13).

(3) On LH side, on door uplocks (10) and (18), make certain that position markers are aligned. Adjust length of rods (9) and (17) as required, and tighten locknuts on adjustable end-fittings, and wirelock (Ref. 20-21-13).

(4) On RH side, on door uplocks (3) and (7) make certain that position markers are aligned. Adjust length of rods (4) and (8) as required until position markers are aligned. Tighten locknuts on adjustable end-fittings, and wirelock (Ref. 20-21-13).

(5) Rod (26) is linked with crank lever (27), and rod (25) with crank lever (23) and rod (26).
Disconnect rod (25) from rod (26).
Move gear uplock on its mounting pin until spring rod (22) is completely compressed.
Turn lever (21) fully clockwise until it reaches inner stop.

(6) Maintain crank lever (23) in the position described in paragraph (5) above, and adjust length of rod (25) until the pin linking it with rod (26) can be installed. Shorten rod (25) by half a turn, and install pin linking it with rod (26), together with washer, and nut. Safety nut with cotter pin.

(7) Remove lever (21) between dual valve (15) and rod (14).
Install adjustment equipment E920150000 on control pin of dual valve (15). Make certain that rigging pin can be readily inserted in rod (14).
Adjust length of rod (14) as required.
Tighten nuts on adjustable end-fittings, and wirelock (Ref. 20-21-13).
Remove adjustment equipment E920150000 .
Position lever (21) on dual valve (15) and secure with pin, washer and nut. Safety with cotter pin. Attach rod (14) to lever (21) and secure with pin, washer and nut. Torque to between 25 and 30 lbf. in. (0.282 and 0.339 mdaN) and safety with cotter pin.

(8) Make certain that lever (26) on depressurization valve (12) is in reference position.
If not proceed as follows :
- Disconnect rod (28) from bellcrank (29)
- Position lever (26) in reference position

- Adjust length of rod (28) for correct connection to bellcrank (29) of torque rod (13). Secure with pin, washer and nut. Safety with cotter pin.
  Tighten adjustable end-fitting locknut, torque to between 30 and 35 lbf. in. (0.339 and 0.395 mdaN) and wirelock (Ref. 20-21-13).

NOTE : Block inner threaded rod during adjustment using aperture (27) at end of rod (28).

(9) Make certain that no rod end-fittings are cross-threaded, and that all nuts are tightened and safetied.

(10) Rotate handwheel not more than 90° clockwise to enable rigging pin to be installed freely.
Safety pin with snapwire and leadseal (Ref. 20-26-13).

(11) Remove handwheel (1) and place on bracket.

D. Main Landing Gear and Doors Ultimate Emergency Extension Control Adjustment
(Ref. Fig. 503)

(1) Depressurization valve control adjustment

(a) In passenger compartment, align indication S (SHUT) on bellcrank (20) with indication on structure, by means of knurled knob.

(b) Install rigging pins E920126100 in LH and RH bellcrank (1) and (7) blocks. If rigging pin cannot be inserted, adjust length of rod (2) or (6) until pin can be readily inserted.

(c) Install rigging pins E920126200 and E920126300 in levers (38) and (40) on triple valves (37) and (39). If rigging pin cannot be inserted, adjust length of rod (36) or (41) until pin can be readily inserted.

(d) Make certain that rod end-fittings are not cross-threaded, locknuts are tightened and wirelocked, and that all rods are correctly installed and safetied.

(e) Remove rigging pins from bellcrank (1) and (7) blocks, and from levers (38) and (40).

(2) Main gear ultimate emergency uplock release control adjustment.

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(a) Nominal length of rods comprising uplock release mechanism :

rod (21)	91.5	mm	(3.6024 in.)
rod (22)	437	mm	(17.2047 in.)
rod (19) and (24)	509	mm	(20.0394 in.)
rod (16) and (26)	418	mm	(16.4567 in.)
rods (17) and (27)	475	mm	(18.7008 in.)
rods (13) and (31)	700	mm	(27.5590 in.)
rods (10) and (34)	683	mm	(26.8897 in.)

(b) In passenger compartment, at access door 233 BF, make certain that rigging pin is installed in control lever (5).

(c) Install rigging pins E920158000 on bellcranks (15) and (28).

If rigging pin cannot be inserted :
- Remove cover (18) or (25) on rod to be adjusted
- Adjust length of rod (19) or (24) until rigging pin can be readily inserted. Tighten locknuts on adjustable end-fittings, and wirelock (Ref. 20-21-13).

(d) On gear uplocks (9) and (30) make certain by means of a close tolerance spacer that the distance between the mechanical stop and the stop on levers (8) and (35) is 23 mm (0.905 in.). If necessary adjust length of rod (14) or (29) until this dimension is obtained. Tighten locknuts on adjustable end-fittings and wirelock (Ref. 20-21-13).

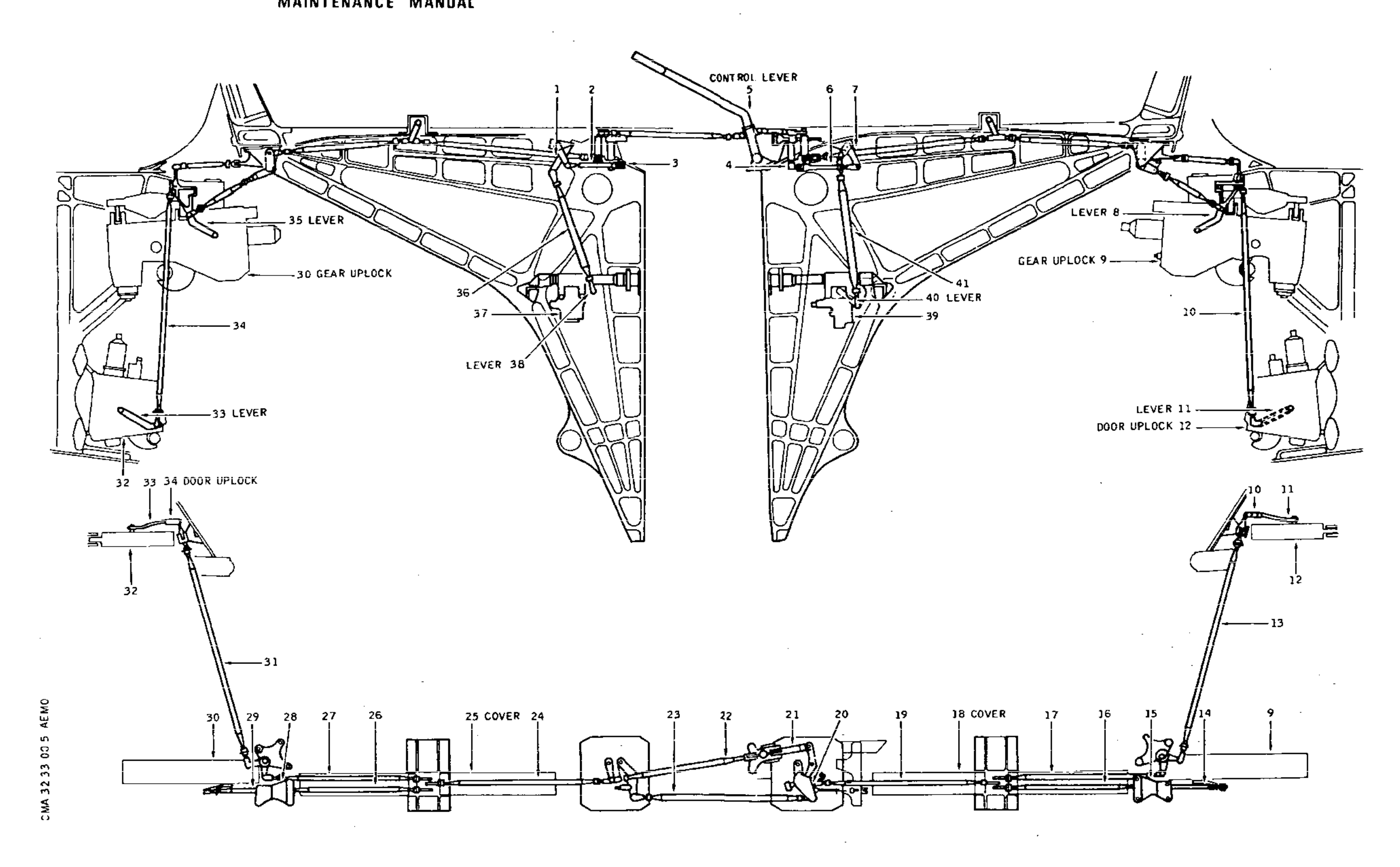
(e) On door uplocks (12) and (32) make certain by means of a close tolerance spacer that the distance between the mechanical stop and the stop on levers (11) and (33) is 23 mm (0.095 in.). If necessary adjust rod (10) or (34) until this dimension is obtained. Tighten locknuts on adjustable end-fittings and wirelock.

(f) Make certain that rod end-fittings are not cross-threaded, locknuts are tightened and wirelocked, and that all rods are correctly installed and safetied.

(g) Install covers (18) and (25).

(h) Remove rigging pins from bellcranks (15) and (28).

E. Test



Main Landing Gear and Doors Ultimate Emergency Uplock Release Control - Schematic
Figure 503

Carry out a functional test of landing gear and doors (Ref. paragraph 4).

F. Close-up

(1) Remove safety collars on door actuators.

(2) Remove access platform.

(3) Pressurize Green Hydraulic System (Ref. 29-11-00, Servicing).

(4) On First Officer's instrument panel, place landing gear NORMAL control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(5) Close gear doors by operating handles on nose and main landing gear legs. Install locking cap.

(6) On First Officer's instrument panel, place landing gear NORMAL control lever in NEUTRAL position.

(7) Shut down and depressurize Green Hydraulic System (Ref. 29-11-00, Servicing).

(8) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(9) Close access doors.

(10) Remove warning notice installed in flight compartment.

(11) Remove safety barriers.

ULTIMATE EMERGENCY EXTENSION - INSPECTION/CHECK

1. General

Visual inspection of main and nose gear Ultimate Emergency extension controls.

2. Visual Check of Nose Gear Extension Controls

A. Open nose gear doors (Ref. 32-00-00, Servicing).

B. Open door 221RF.

(1) Make certain that the control handwheel (removable) is in position on its support.

(2) Make certain that the control shaft locking pin is in position and attached to the structure.

(3) Close door 221RF.

C. In nose gear bay.

(1) Make certain that the rubber sleeves are in position on the two control shafts and in correct condition.

(2) Make certain that all rod end-fittings are wirelocked.

(3) On the control linkage, at the gear and door uplocks, the dual valve and the depressurization valve, make certain that connecting hardware is correctly safetied.

D. Close nose gear doors (Ref. 32-00-00, Servicing).

3. Visual Check of Main Gear Extension Controls

A. Open main gear doors (Ref. 32-00-00, Servicing).

B. Open access door 233BF.

(1) Make certain that bellcrank rigging pin is in position and attached to the structure.

(2) Make certain that the knurled knob controlling the triple valves is safetied with snapwire.

(3) Make certain that the control lever (removable) is in position on its bracket and that rigging pin is in position.

RB (4) Make certain that the Q.A.D. (self-sealing) connectors
RB are in position and that the flexible hose is routed
RB below the isolation valve and the isolation valve is
RB safetied with snapwire.

**ON A/C 001-004,
(Ref. Fig. 601)

R After SB 32-018 For A/C 001-004,
(Ref. Fig. 602)

(5) Make certain that control rod end-fittings are wire-locked.

(6) Make certain that connecting hardware is correctly safetied.

C. Close access door 233BF.

D. In LH and RH main gear bays :

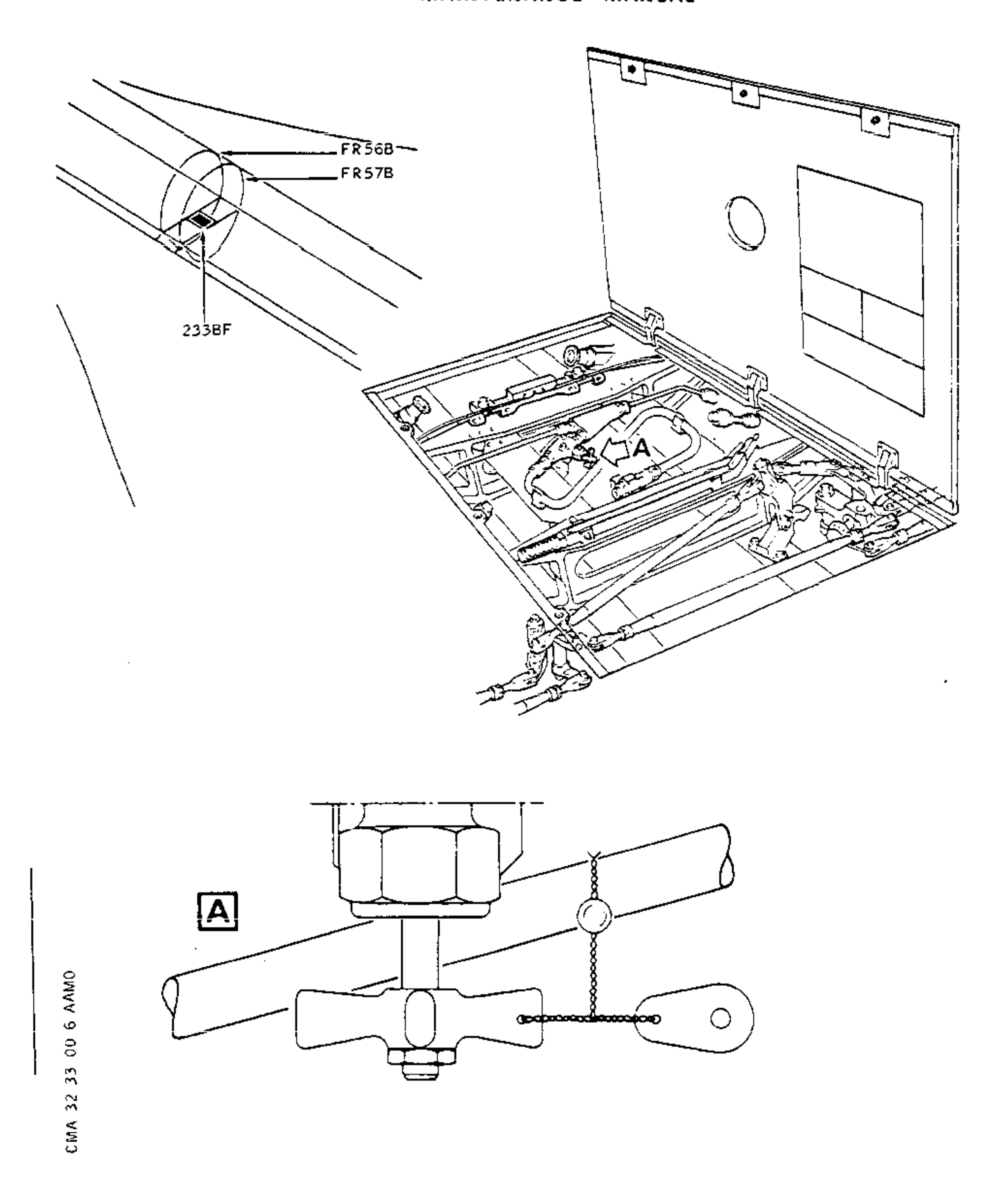
(1) Remove protective covers 571JK, 571YK, 671JK and 671YK.

(2) Make certain that all rod end fittings are wire-locked.

(3) On the control linkage, the gear and door uplocks and the triple valves, make certain that connecting hardware is correctly safetied.

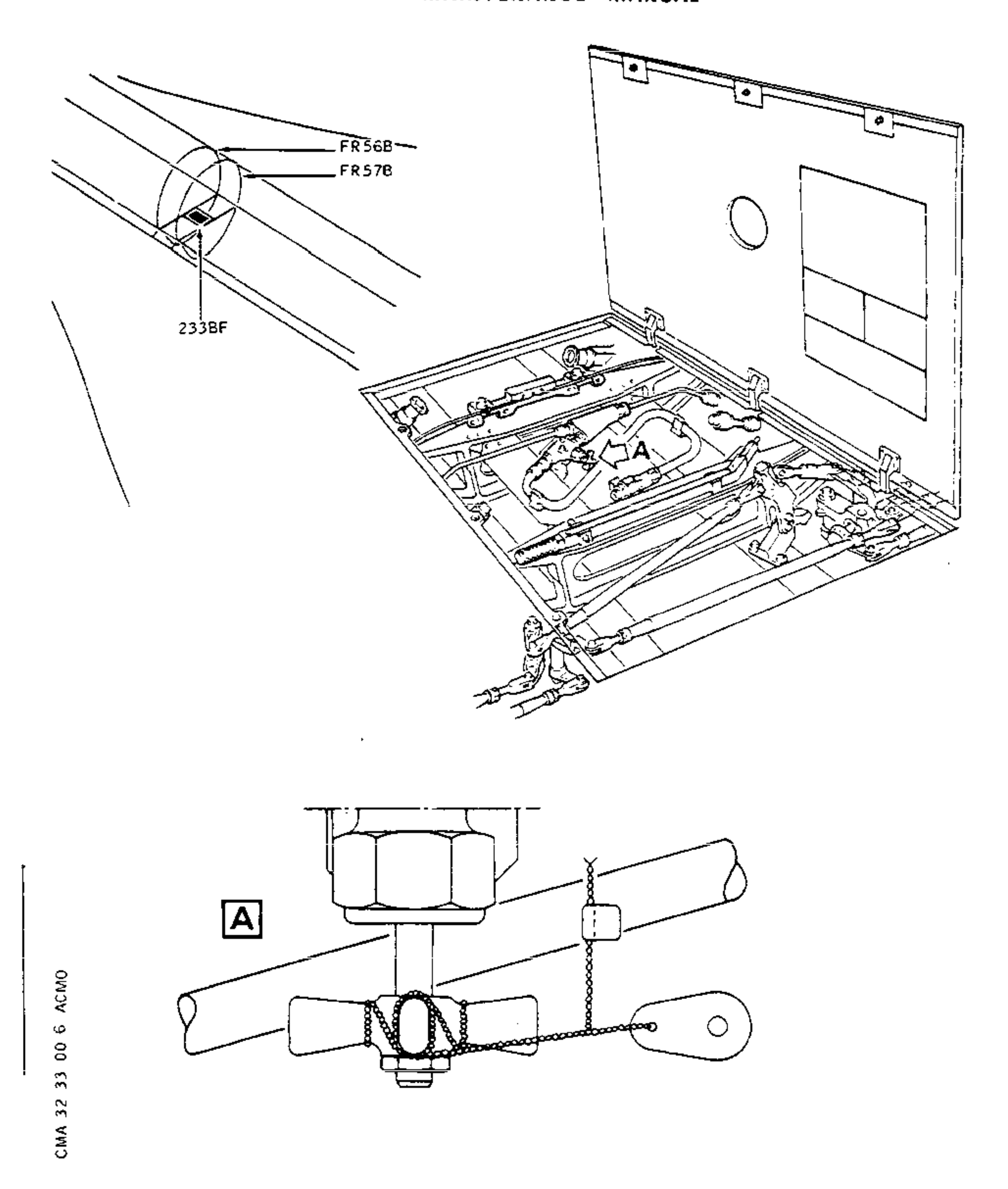
(4) Install protective covers 571JK, 571YK, 671JK and 671YK.

E. Close main gear doors (Ref. 32-00-00, Servicing).



Main Gear Telescopic Brace Strut Pressurization
Isolation Valve - Safetying
Figure 601

R



Main Gear Telescopic Brace Strut Pressurization
Isolation Valve - Safetying
Figure 602

R

RH MAIN GEAR TRIPLE VALVE WITH DEPRESSURIZATION VALVE
REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The triple valve with depressurization valve is located in the RH main landing gear bay.
It is mechanically controlled by a knurled knob accessible through door 233BF.
The main landing gear doors must be opened to carry out removal.

2. RH Main Gear Triple Valve with Depressurization Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Collars - Main Gear Door Actuating Cylinder	D921317000
Rigging Pin	E920126100
Rigging Pin	E920126300
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
Blanking Plugs/Caps	
Access Platform - 3.220 in (10 ft 7 in)	
Container	
Common Grease (Ref. 20-30-00, No.051)	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit, energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open doors by operating handle located on LH main gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in flight compartment.

(12) Depressurize Yellow hydraulic system.
(Ref. 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks
(Ref. 29-13-00, Servicing).

(14) Install safety collars.

C. Remove (Ref. Fig. 401)

(1) Remove protective cover.

(2) Disconnect and cap hydraulic lines.

(3) Disconnect rod (2) from control lever (9).

(a) Remove cotter pin and nut (7).

(b) Remove washer (8).

(c) Remove bolt (10).

(4) Remove valve.

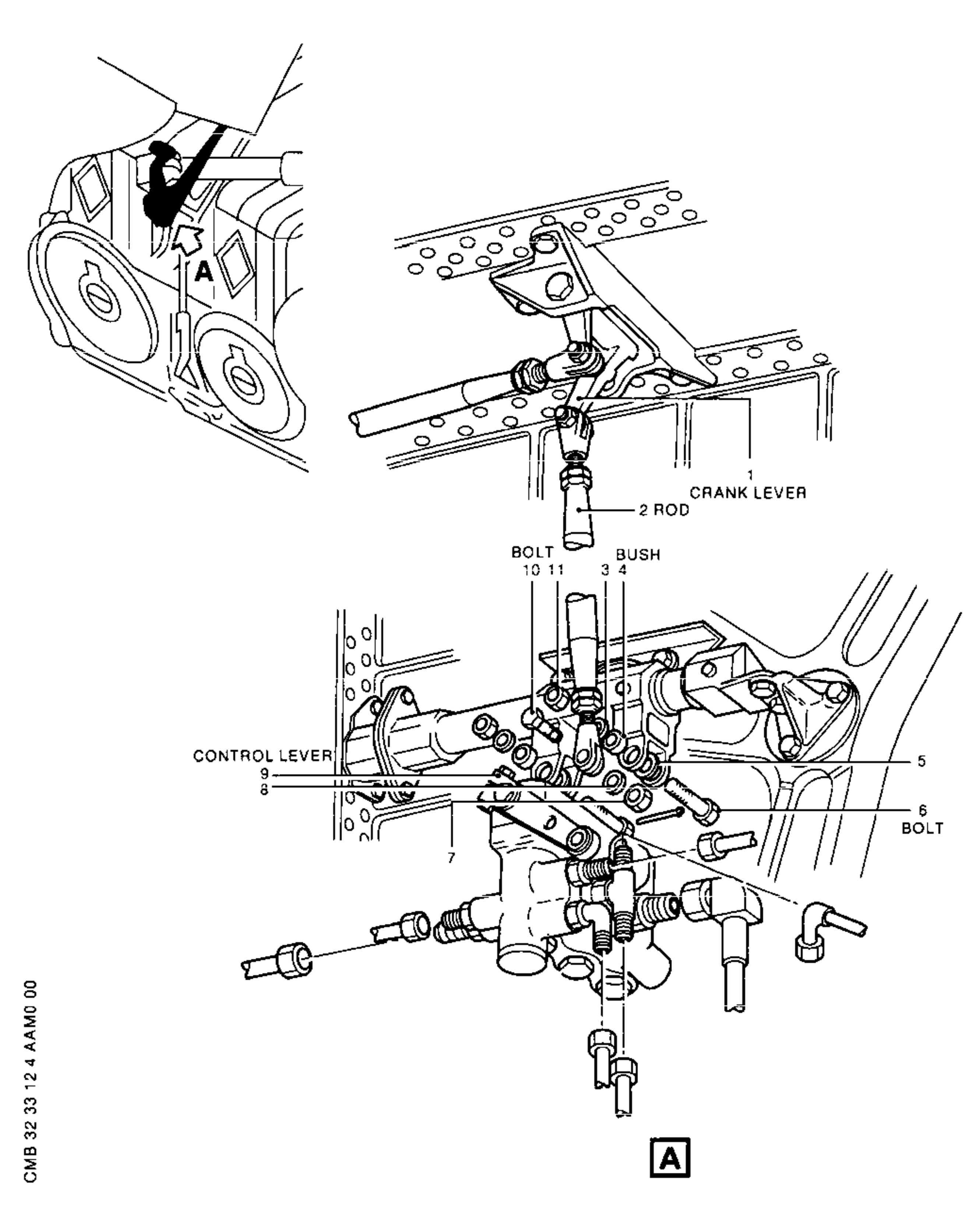
(a) Remove nuts (11) and washers (3).

(b) Remove bolts (6), retain washers (5) and bushes (4) for reinstallation.

D. Preparation of Replacement Component

NOTE : The replacement triple valve with depressurization valve is filled with Product No.011 (Ref. 20-30-00). It is not fitted with unions, which should be taken from the removed unit. Seals should be changed before assembly.

E. Install



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RH Main Gear Triple Valve with
Depressurization Valve
Figure 401

(1) Position and install replacement valve.

(2) Install washers (5), bolts (6), bushes (4) and washers (3).

(3) Tighten nuts (11).

(4) Rig crank lever (1) using rigging pin E920126100.

(5) Rig valve control lever (9) using rigging pin E920126300.

(6) Connect rod (2) to control lever (9).

NOTE: Adjust length of rod if necessary.

(a) Grease bolt (10) with Product No.051 and install.

(b) Install washer (8).

R (c) Tighten nut (7) and safety with new cotter pin.

(7) Remove rigging pin E920126100 and 920126300.

(8) Remove caps from unions and hydraulic lines.

(9) Connect hydraulic lines to unions.

(10) Carefully clean area around replacement component. Make certain that no traces of hydraulic fluid remains.

(11) Install and secure protective cover.

(12) Remove container.

(13) Remove safety collars.

(14) Remove access platform.

(15) Remove safety clips and tags, and reset circuit breakers.

(16) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(17) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(19) Close main gear doors by operating handle located on LH main gear leg. Install locking cap.

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Test

RB (1) Carry out at least two operations of the landing gear
RB ultimate emergency extension system (Ref. 32-33-00,
RB Adjustment/Test).

RB (2) Carry out at least two landing gear Normal extension and retractions (Ref. 32-31-00, Adjustment/Test).

R (3) Carry out a test of the RH triple valve (Ref.
R Adjustment/Test).

RB (4) The replacement equipment must be carefully checked for leakage upon completion of each test.

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) De-energize the aircraft electrical network (Ref. 24-41-00, Servicing). Disconnect electrical ground power unit.

(3) Close access doors.

(4) Remove warning notice from flight compartment.

RH MAIN GEAR TRIPLE VALVE WITH DEPRESSURIZATION VALVE - INSPECTION/CHECK

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A triple valve with depressurization valve assembly located in the RH main gear bay serves during Ultimate Emergency main gear extension to:

- control of the main gear return and depressurization selector by means of its associated depressurization valve.
- Vent the door actuating jack, landing gear actuating cylinder, and RH main gear shock absorber shortening jack through the associated triple valve.

The RH main gear triple valve and depressurization valve assembly, and the LH main gear triple valve are actuated by a single knurled control knob.

2. RH Main Gear Triple Valve with Depressurization Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical ground power unit	-

DESCRIPTION	PART NO.
Drainage equipment	D924170100
Hydraulic fluid container	-
Safety barriers	-
Snapwire 0.5 mm (0.020 in)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Make certain that the following circuit breakers are set.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH U/C WEIGHT SW B SYS SUP	3-213	G 294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Connect drainage equipment D924170100.

(8) Install hydraulic fluid containers in zones 525 and 625

(9) Depressurize yellow and Green hydraulic systems (Ref. 29-21-00, Servicing and 29-11-00, Servicing).

(10) Position safety barriers prohibiting access to landing gear door travel ranges.

C. Check

(1) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(2) On centre console, place landing gear and doors Emergency control lever in DOORS position.

(3) Open access door 233BF.

(4) Fully unscrew knurled knob.

(5) Remove locking pin from bellcrank.

(6) Insert operating lever into bellcrank.

(7) Place operating lever fully to the right.

(a) The main gear doors unlock.

(8) Push open doors.

(a) Return fluid from the door actuating jacks is vented through the triple valves.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) On centre console, place landing gear and doors Emergency control lever in NEUTRAL position.

(11) Reset main gear mechanical lock release system.

(a) Install lock pin in bellcrank.

(b) Screw knurled knob fully in.

(12) Check that landing gear and door uplock hooks are released.

WARNING : MAKE CERTAIN THAT NOSE GEAR DOOR TRAVEL RANGES ARE CLEAR.

(13) Pressurize the Green and Yellow hydraulic systems (Ref. 29-11-00, and 29-21-00, Servicing).

(14) On centre console, place landing gear and doors Emergency control lever in WHEELS position.

(a) The nose gear doors open.

(b) The landing gear and door uplocks are automatically reset.

(15) On centre console, place landing gear Emergency control lever in NEUTRAL position.

(16) Shut down hydraulic power and depressurize Green hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(17) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Main gear and nose gear doors close.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(18) Fully unscrew knurled knob.

(19) On LH main gear leg, remove locking cap and place operating handle in open position (indicator plate showing red).

(a) Main gear main doors remain closed. The depressurization valve is actuated.

(b) Nose gear main doors remain closed.

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Screw knurled knob fully in.

(22) Safety knurled knob and locking pin with snapwire (Ref. 20-26-13) and seal.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(23) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(a) Main gear doors open.

(24) Close gear doors by operating handle located on LH main landing gear leg. Install locking cap.

(25) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(26) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Remove hydraulic fluid containers.

(3) Remove drainage equipment D924170100.

(4) Replenish hydraulic tanks as required (Ref. 12-12-29).

(5) Close access doors.

(6) Remove safety barriers.

LH MAIN GEAR TRIPLE VALVE - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The LH main gear triple valve is located in the LH main landing gear bay.
It is mechanically controlled by a knurled knob accessible through door 233BF.
The main landing gear doors must be opened to carry out removal.

R 2. LH Main Gear Triple Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Safety Collars - Main Gear Door Actuating Cylinder	D921317007
Rigging Pin	E920126100
Rigging Pin	E920126200
Circuit Breaker Safety Clips	-

DESCRIPTION	PART NO.
Access Platform - 3.220 m (10 ft. 7 in.)	
Blanking Plugs/Caps	
Container	
Common Grease (Ref. 20-30-00, No.051)	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit, energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open gear doors by operating handle located on LH main gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Place warning notice in flight compartment.

(12) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety collars.

C. Remove (Ref. Fig. 401)

(1) Remove protective cover.

(2) Disconnect and cap hydraulic lines.

(3) Disconnect rod (2) from control lever (6).

(a) Remove cotter pin and nut (5).

(b) Remove washer (4).

(c) Remove bolt (3).

(4) Remove valve.

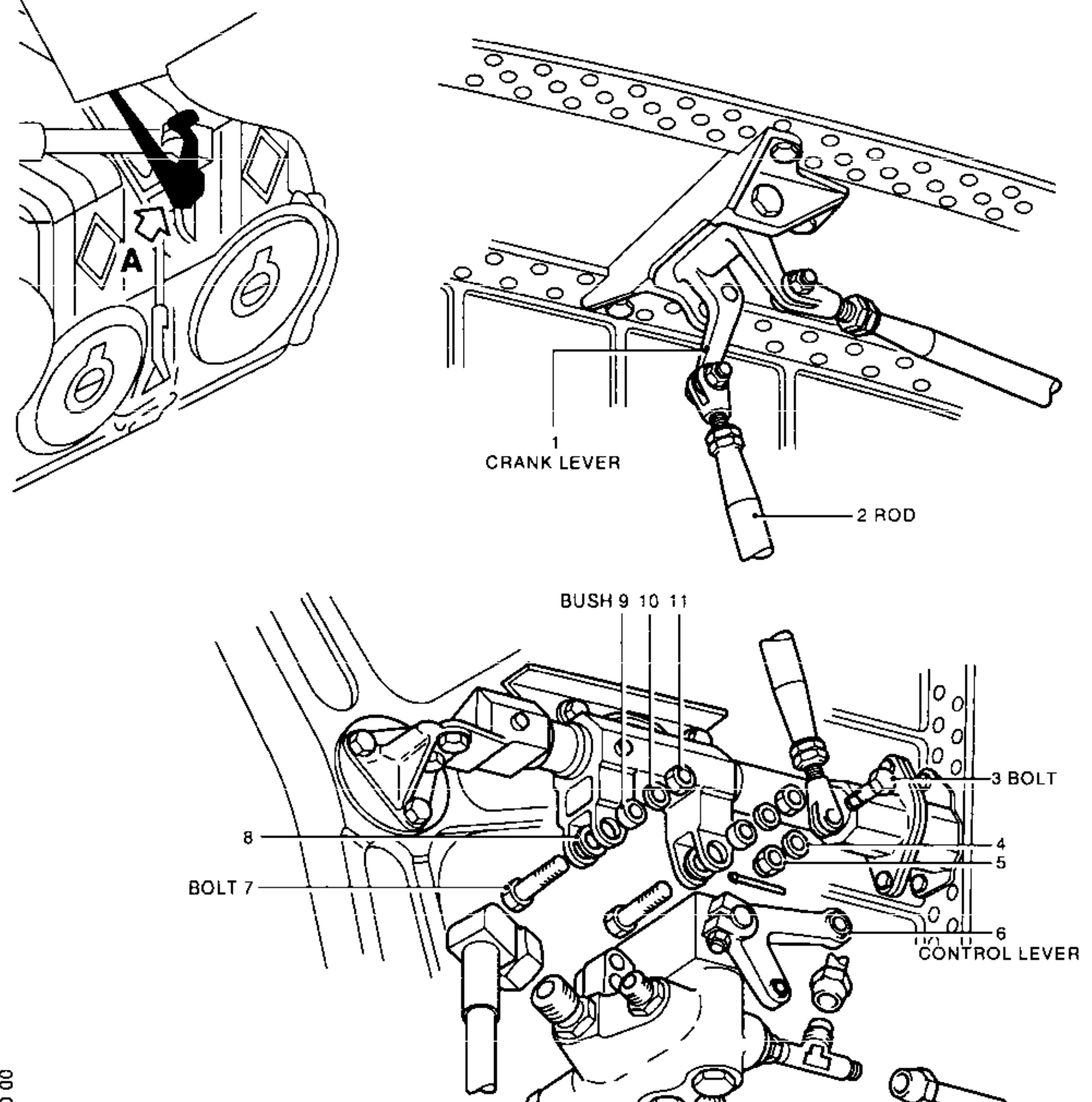
(a) Remove nuts (11) and washers (10).

(b) Remove bolts (7) retain washers (8) and bushes (9) for reinstallation.

D. Preparation of Replacement Component

The replacement triple valve is filled with product No.011 (Ref. 20-30-00). It is not fitted with unions, which should be taken from the removed unit. Seals should be changed before assembly.

E. Install



R

LH Main Landing Gear Triple Valve
Figure 401

(1) Position and install replacement valve.

(2) Install washers (8) bolts (7) bushes (9) and washers (10).

(3) Tighten nuts (11).

(4) Rig crank lever (1) using rigging pin E920126100.

(5) Rig valve control lever (6) using rigging pin E920126200.

(6) Connect rod (2) to control lever (6).

NOTE : Adjust length of rod if necessary.

(a) Grease bolt (3) with Product No.051 and install.

(b) Install washer (4).

(c) Tighten nut (5) and safety with cotter pin.

(7) Remove rigging pins E920126100 and E920126200.

(8) Remove caps from unions and hydraulic lines.

(9) Connect lines to unions.

(10) Carefully clean area around replacement component. Make certain that no trace of hydraulic fluid remains.

(11) Install and secure protective cover.

(12) Remove container.

(13) Remove safety collars.

(14) Remove access platform.

(15) Remove safety clips and tags and reset circuit breakers.

(16) Pressurize green and yellow tanks (Ref. 29-13-00, Servicing).

(17) Pressurize green hydraulic system (Ref. 29-11-00, Servicing).

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(19) Close main gear doors by operating handle located on LH main gear leg. Install locking cap.

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Test

RB (1) Carry out at least two operations of the landing gear
RB ultimate emergency extension system (Ref. 32-33-00,
RB Adjustment/Test).

RB (2) Carry out at least two landing gear Normal extension and retractions (Ref. 32-31-00, Adjustment/Test).

R (3) Carry out a test of the LH triple valve (Ref.
R Adjustment/Test).

RB (4) The replacement equipment must be carefully checked for leakage upon completion of each test.

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) De-energize the aircraft electrical network (Ref. 24-41-00, Servicing). Disconnect electrical ground power unit.

(3) Close access doors.

(4) Remove warning notice from flight compartment.

LH MAIN GEAR TRIPLE VALVE - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A triple valve located in the LH main gear bay serves during Ultimate Emergency main gear extension for :

- Venting of door actuating jack, landing gear actuating cylinder and LH main gear shock absorber shortening jack return.

The LH main gear triple valve as well as the RH main gear triple valve and decompression valve assembly are actuated through the single knurled control knob.

2. LH Main Gear Triple Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Drainage Equipment	D924170100
Hydraulic Fluid Container	
Safety Barriers	

DESCRIPTION	PART NO.
Snapwire, 0.5 mm (0.020 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH UC WEIGHT SW "B" SYS SUP	3-213	G 294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Connect drainage equipment D924170100.

(8) Install hydraulic fluid containers in zones 525 and 625.

(9) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing, 29-21-00, Servicing).

(10) Position safety barriers prohibiting access to landing gear door travel ranges.

C. Check

(1) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(2) On centre console, place landing gear and doors Emergency control lever in DOORS position.

(3) Open access door 233BF.

(4) Fully unscrew knurled knob.

(5) Remove locking pin from bellcrank.

(6) Insert operating lever into bellcrank.

(7) Move operating lever fully to the right.

(a) The main gear doors unlock.

(8) Push open doors.

(a) Return fluid from the door actuating jacks is vented through the triple valves.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) On centre console, place landing gear and doors Emergency control lever in NEUTRAL position.

(11) Reset main gear mechanical unlocking system.

(a) Install lock pin in bellcrank.

(b) Screw knurled knob fully home.

(c) Safety knurled knob and lock pin with snapwire (Ref. 20-26-13) and seal.

(12) Check that landing gear and door uplock hooks are fully open.

WARNING : MAKE CERTAIN THAT NOSE GEAR DOOR TRAVEL RANGES ARE CLEAR.

(13) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(14) On centre console, place landing gear and door Emergency control lever in WHEELS position.

(a) The nose gear doors open.

(b) Landing gear and door uplocks are automatically reset.

(15) On centre console, place landing gear Normal control lever in NEUTRAL position.

(16) Shut down and depressurize the Yellow hydraulic system (Ref. 29-21-00, Servicing).

(17) On nose and LH main landing gear legs, remove locking caps and place operating handles in open position (indicator plates showing red).

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(19) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(20) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(21) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(22) Shut down hydraulic power and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Remove hydraulic fluid containers.

(3) Remove drainage equipment D924170100.

(4) Replenish tanks (Ref. 12-12-29).

(5) Close access doors.

(6) Remove safety barriers.

NOSE GEAR DEPRESSURIZATION VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nose gear depressurization valve is located in the nose landing gear bay.
It is mechanically controlled by a handwheel (detachable) accessible through door 221RF.

2. Nose Gear Depressurization Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.468 m (11 ft.4 in.)	
Container	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
Lockwire Dia 0.7 mm (0.028 in.) Corrosion Resistant Steel	
Pin - Dia 4.8 mm (0.188 in.)	
Common Grease (Ref. 20-30-00, No.051)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open landing gear doors by operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (29-11-00, Servicing)

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display a warning notice in flight compartment.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety collars.

R C. Remove (Ref. Fig. 401)

(1) Disconnect hydraulic lines.

(2) Disconnect spring rod (5) from lever (15).

(a) Remove cotter pin, remove nut (4).

(b) Retain washer (3) for reinstallation.

(c) Remove clevis bolt (17).

(3) Disconnect spring rod (5) from bellcrank (7).

(a) Remove cotter pin, remove nut (9).

(b) Retain washer (8) for reinstallation.

(c) Remove bolt (6).

(4) Cut and remove lockwire, remove attaching screw (1) from depressurization valve (18).

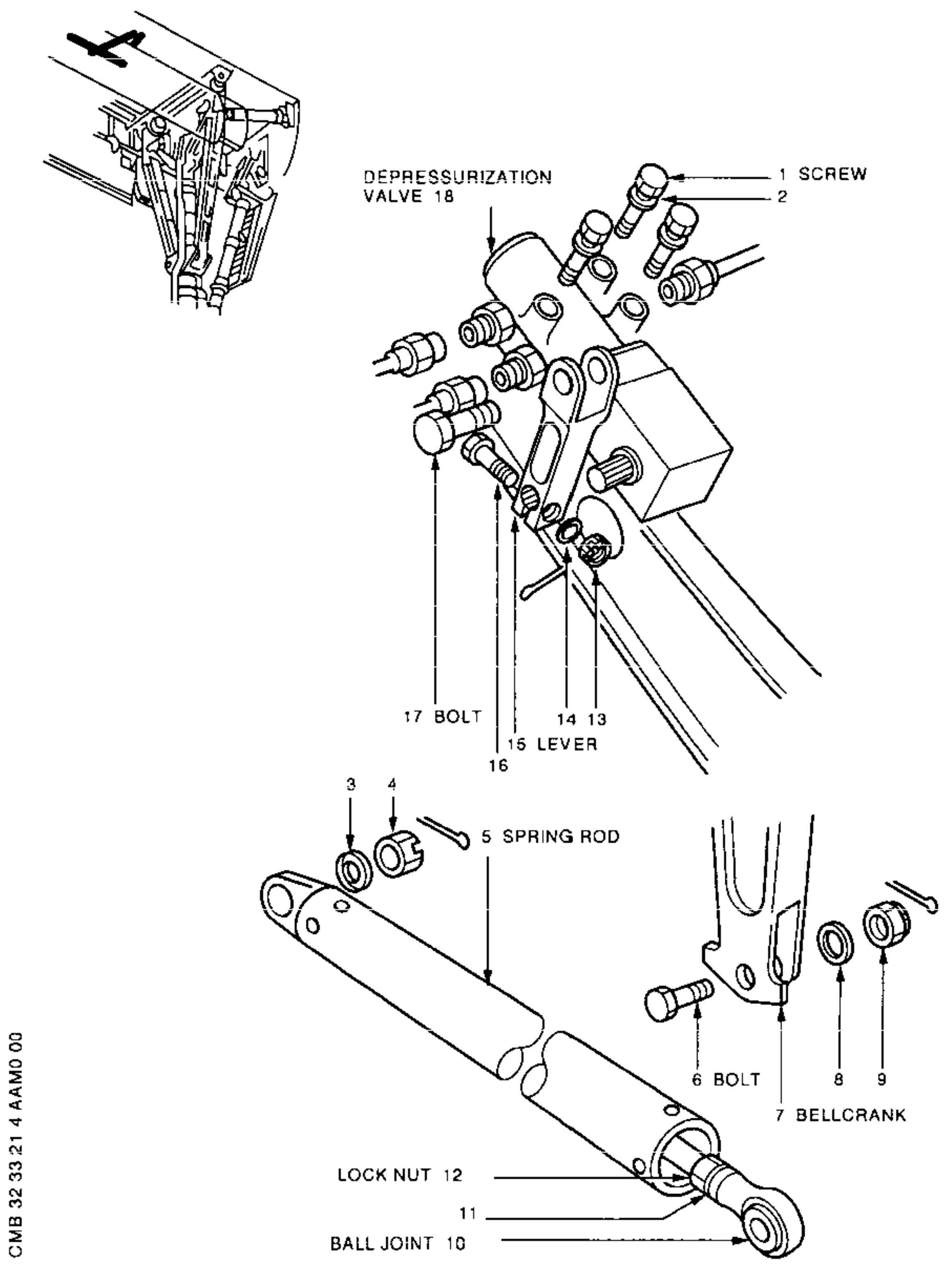
(5) Remove depressurization valve (18), retain attaching screws (1), washers (2) for reinstallation.

(6) Cap open line ends.

(7) Remove lever (15).

(a) Remove cotter pin and remove nut (13).

(b) Remove washer (14).



Nose Gear Depressurization Valve
Figure 401

(c) Remove bolt (16).

(d) Remove lever (15).

R D. Preparation of Replacement Component (Ref. Fig. 401)

NOTE: The replacement depressurization valve is filled with product No.011 (Ref. 20-30-00).

(1) Replacement component is not equipped with unions. Take them from removed valve. Change O-rings before installation.

(2) Line up reference lines on replacement depressurization valve and lever (15) and install lever (15) on splined pin.

(3) Secure lever (15) on splined pin with bolt (16), washer (14) and nut (13). Torque nut (13) to between 10 and 15 lbf in (0.113 and 0.169 mdaN). Safety nut (13) with a cotter pin.

R E. Install (Ref. Fig. 401)

(1) Remove caps from hydraulic lines.

(2) Position and install replacement depressurization valve (18).

(3) Install depressurization valve by means of attaching screws (1) and washers (2).

(4) Wirelock screws (1) (Ref. 20-21-13).

(5) Connect hydraulic lines to valve.

(6) Open access door 221RF. Remove locking pin from landing gear Ultimate Emergency extension control handwheel. Turn handwheel fully counterclockwise.

(7) Install spring rod (5).

R

R (a) Connect spring rod (5) to lever (15) with bolt (17) washer (3) and nut (4). Torque nut (4) to between 40 and 50 lbf in (0.451 and 0.564 mdaN). Safety nut (4) with a cotter pin.

R (b) Position ball joint (10) of spring rod on bellcrank (7).

NOTE: If required:

- Cut and remove lockwire and loosen spring rod locknut (12). Turn ball joint to make the ball joint hole and bellcrank hole coincide perfectly.

R (c) Connect ball joint (10) and bellcrank (7) with bolt (6). Install washer (8). Torque nut (9) to between 40 and 50 lbf in (0.451 and 0.564 mdaN). Safety nut (9) with cotter pin.

NOTE: If required:

- Torque locknut (12) on lock washer (11) to between 30 and 35 lbf in (0.339 and 0.395 mdaN).
- Wirelock locknut (12) (Ref. 20-21-13).

R (d) Remove pin from spring rod.

(8) Turn landing gear Ultimate Emergency extension handwheel by not more than 90° clockwise until locking pin can be inserted freely.

(9) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(10) Remove hydraulic fluid container.

(11) Remove safety collars.

(12) Remove access platform.

(13) Remove safety clips and tags and reset the circuit breakers.

(14) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(17) Close doors by means of operating handle located on nose landing gear leg. Install locking cap.

(18) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(19) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Test

Carry out test (Ref. 32-33-21, Adjustment/Test).

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors.

(4) Remove warning notice from flight compartment.

NOSE GEAR DEPRESSURIZATION VALVE - ADJUSTMENT/TEST

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The depressurization valve hydraulically controls the associated return and depressurization selector valve and displaces the valve spool during Ultimate Emergency to achieve nose landing gear extension.

2. Test of Nose Gear Depressurization Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Safety Sleeve - Nose Landing Gear Doors	E925002000
R Snapwire 0.5 mm (0.020 in)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH UC WEIGHT SW "B" SYS SUP	3-213	G 294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Test

(1) Open door 221RF.

(2) Remove locking pin.

(3) Install detachable handwheel on lock release system control shaft.

(4) Rotate handweel fully anti-clockwise and then 0.75 turns (270°) clockwise.

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

CLEAR DUAL VALVE VENT PORT AREA.

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(7) Check that nose gear doors open correctly when operating door ground opening control located on nose gear leg and that no evidence of internal leakage in depressurization valve is heard.

NOTE : If necessary, check that Ultimate Emergency uplock release control is correctly adjusted and carry out adjustment of depressurization valve (Ref. 32-33-00, Adjustment/Test) Repeat checks as per paragraph (7).

(8) Place operating handle located on nose gear leg in "close" position (indicator plate showing white). Nose gear doors close. Install locking cap.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Rotate handwheel fully anti-clockwise, then rotate 1.75 turns clockwise.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

CLEAR DUAL VALVE VENT PORT AREA.

(13) Remove locking cap and place operating handle located on nose gear leg in "open" position (indicator plate showing red). Nose gear doors must remain closed. Depressurization valve is activated.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Rotate handwheel fully anti-clockwise, then rotate clockwise not more than 90° to enable locking pin to be installed freely.

(17) Remove handwheel and place on bracket.

(18) Safety locking pin with snapwire and leadseal (Ref.20-26-13).

(19) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(20) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position. Nose gear doors open.

(21) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(22) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(23) Install safety collars.

(24) Check replacement component for leaks.

(25) Remove safety collars.

(26) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(27) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(28) Place operating handle located on nose gear leg in "close" position (indicator plate showing white). Nose gear doors close. Install locking cap.

(29) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

D. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors.

ULTIMATE EMERGENCY NOSE GEAR EXTENSION DUAL VALVE - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The Ultimate Emergency nose gear extension dual valve is located in the nose landing gear bay.
It is mechanically controlled by a handwheel (detachable) accessible through door 221 RF.

2. Ultimate Emergency Nose Gear Extension Dual Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Access Platform 11 ft 4 in (3.468 m)	-
Container	-
Safety Sleeve - Nose Landing Gear Doors	E925002000
Adjustment Equipment - Nose Landing Gear Dual Cock Control	E920150000

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	-
Snapwire 0.020 in (0.50 mm) Dia.	-
Lockwire 0.028 in (0.70 mm) Dia. (Corrosion Resistant Steel)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) Remove locking cap and open landing gear doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Display warning notice in flight compartment.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety sleeves.

C. Remove (Ref. Fig. 401)

R

(1) Disconnect hydraulic lines.

(2) Disconnect rod (4) from lever (1).

(a) Remove cotter pin.

(b) Remove nut (9).

(c) Remove washer (10).

(d) Remove pivot pin (11).

(3) Remove dual valve (5). At each attach point:

(a) Remove cotter pin.

(b) Remove nut (12).

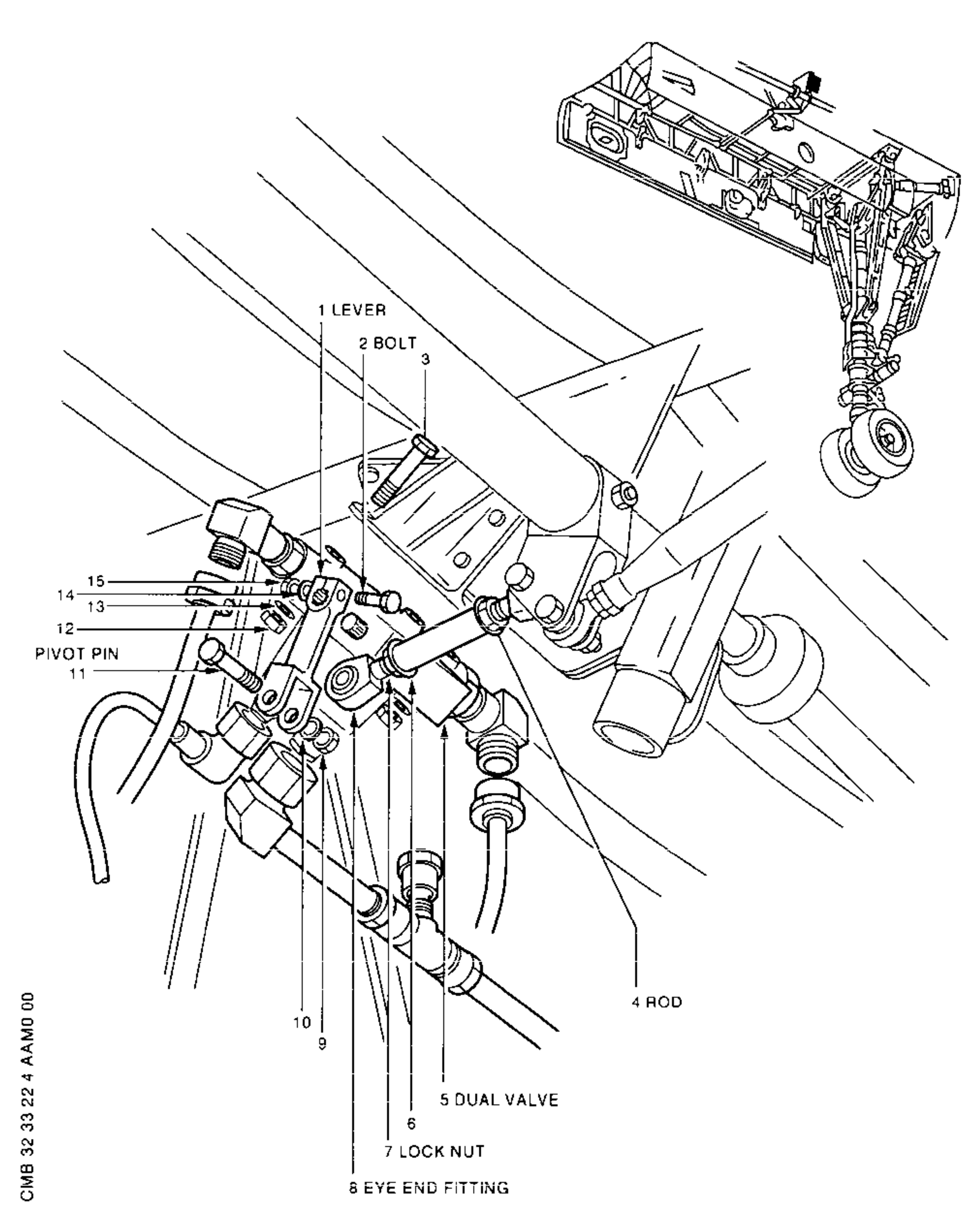
(c) Remove washer (13).

(d) Remove bolt (3).

(4) Blank off hydraulic lines.

D. Preparation of Replacement Component

NOTE: New dual valve is filled with product No.011 (Ref. 20-30-00).



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Ultimate Emergency Nose Gear Extension Dual Valve
R Figure 401

New component is not equipped with unions.
Take them from Removed component. Change seals. Do not fully tighten elbow unions at this stage.
The replacement dual valve is equipped with its lever (1).

(1) Remove lever (1).

(a) Remove cotter pin.

(b) Remove nut (15).

(c) Remove washer (14).

(d) Remove bolt (2).

(e) Remove lever (1).

E. Install

(1) Remove blanking caps from hydraulic lines.

(2) Install new dual valve (5).

(3) Install component by means of bolts (3), washers (13) and nuts (12).

(4) Tighten nuts (12) and safety with cotter pins.

(5) Connect hydraulic lines to dual valve. Tighten elbow unions.

(6) Open access door 221 RF. Remove locking pin and turn landing gear Ultimate Emergency extension handwheel fully counter-clockwise.

(7) Adjust rod (4).

(a) Install tool E920150000 on dual valve (5) splined spindle and secure.

(b) Line up spherical eye-end fitting (8) with rigging hole. If required:

- Cut and remove lockwire, remove locknuts (7) located at each end of rod(4).
- Rotate rod (4) so as to line up spherical eye-end fitting with tool.

- Temporarily attach rod to tool with pivot pin (11).
- Position and install lock washers (6).
- Fully tighten locknuts (7) and wirelock (Ref. 20-21-13).
- Remove pivot pin (11).
- Remove tool E920150000.

(8) Engage lever (1) on valve splined spindle and align the marks engraved on dual valve (5) spindle and lever (1).

(9) Install lever (1) on splined spindle with bolt (2). Install washer (14) and tighten nut (15).

(10) Safety nut (15) with cotter pin.

(11) Connect rod (4) to lever (1) by means of pivot pin (11). Install washer (10) and nut (9). Torque nut (9) to between 25 and 30 lbf in (0.282 and 0.339 mdaN).

(12) Safety nut (9) with cotter pin.

(13) Turn landing gear Ultimate Emergency extension handwheel not more than 90° clockwise until locking pin can be inserted freely. Safety locking pin with snapwire (ref. 20-26-13) and seal.

(14) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(15) Remove spillage fluid container.

(16) Remove safety sleeves.

(17) Remove access platform.

(18) Remove safety clips and tags and reset circuit breakers.

(19) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(20) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(21) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING: MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(22) Close landing gear doors by operating handle located on nose landing gear leg. Install locking cap.

(23) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(24) Shut down hydraulic ground power unit and depressurize Green system (Ref. 29-11-00, Servicing).

F. Test

RB (1) Carry out at least two operations of the landing gear
RB Ultimate Emergency extension system (Ref. 32-33-00,
RB Adjustment/Test).

RB (2) Carry out at least two landing gear Normal retraction and extensions (Ref. 32-31-00, Adjustment/Test).

RB (3) Check replacement component for leakage on completion
RB of tests.

G. Close-Up

(1) Top up Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors.

(4) Remove warning notice from flight compartment.

ULTIMATE EMERGENCY NOSE GEAR EXTENSION DUAL VALVE - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The dual valve is installed in the nose gear bay. It vents nose gear and door actuating cylinder and jack returns during landing gear Ultimate Emergency extension.

2. Ultimate Emergency Nose Gear Extension Dual Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Drainage Equipment	D924170100
Hydraulic Fluid Container	
Safety Barriers	
Snapwire Dia. 0.50 mm (0.020 in)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Make certain that visor is not uplocked.

(5) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
RH UC WEIGHT SW "B" SYS SUP	3-213	G 294	B 9
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Connect drainage equipment D924170100.

(8) Install hydraulic fluid container at zone 127.

(9) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(10) Position safety barriers prohibiting access to landing gear door travel ranges.

C. Check

(1) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(2) On centre console, place landing gear and doors Emergency control lever in DOORS position.

(3) Open access door 221RF.

(4) Remove locking pin.

(5) Install handwheel on unlocking system control shaft end fitting.

(6) Turn handwheel slowly until doors unlock.

(a) As soon as the handwheel is turned the gear extension dual valve opens.

(7) Manually push the doors open.

(a) Return liquid from door jack is vented through the dual valve.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) On centre console, place landing gear and doors Emergency control lever in NEUTRAL position.

(10) Reset main gear mechanical uplock release system.

(a) Rotate handwheel fully anti-clockwise then rotate clockwise not more than 90° to enable locking pin to be installed freely. Remove handwheel and place it on its support

(b) Install locking pin.

(c) Safety locking pin with snapwire (Ref. 20-26-13) and seal.

(11) Make certain that door uplock hooks are fully released.

(12) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(13) On centre console, place landing gear and door Emergency control lever in DOORS position.

(a) Main landing gear doors open.

(b) Door uplocks are automatically reset.

(14) On centre console, place landing gear and door Emergency control lever in NEUTRAL position.

(15) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(16) On nose and LH main landing gear legs, remove locking caps and place operating handles in open position (indicator plates showing red).

(17) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR DOOR TRAVEL RANGES ARE CLEAR.

(18) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(19) Close gear doors by operating handles located on nose and LH main landing gear legs. Install locking caps.

(20) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(21) Shut down hydraulic power and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Remove hydraulic fluid container.

(3) Remove drainage equipment D924170100.

(4) Replenish hydraulic tanks (Ref. 12-12-29).

(5) Close access doors.

(6) Remove safety barriers.

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WHEELS AND BRAKES - DESCRIPTION AND OPERATION

1. General

   A. The main landing gear includes eight wheels and the nose gear two. The tail gear also includes two wheels. Only the main landing gear wheels have a braking system controlled by the Captain and First Officer. The system provides three means of braking: NORM, EMERG, and PARK, selected by a lever located on the centre console.

   B. Nose gear and main gear wheel braking is automatically provided during the landing gear retraction sequence.

   C. An indicating system enables the crew to check the braking system for correct operation and report possible faults.

   D. Each main gear brake unit includes a temperature sensor.

R

   E. The flat tyre detection system serves to alert the flight crew in the event of an underinflated or burst tyre and thus warn of an overload of at least 30% on the adjacent wheel at maximum take-off weight.

2. Wheels and Brakes

   A. Wheels

      (1) The main landing gear wheels are mounted on tapered roller bearings revolving on the axles. The wheels include a system whereby the tyre is deflated in the event of overheating, to prevent tyre bursting.

      (2) Each main gear wheel is fitted with a brake unit mounted on the axle (bogie beam side). The brake units are of the carbon multi-disk type with an automatic play take-up system.

      (3) The nose gear wheels are secured to the rotating axle, which is mounted on tapered roller bearings. A brake unit of steel mono-disk type is installed on the RH wheel side.

      (4) The twin tail-gear wheels, mounted on an axle fitted to the rocker beam, are identical. The wheels rotate on tapered roller bearings.

B. Normal Braking (Ref. Fig. 001)

R

(1) Normal braking is controlled by the rudder pedals, which automatically operate an electrical pedal position transmitter. The system provides proportional and differential braking. Pressure is supplied from the Green hydraulic system, and is replaced by the Yellow servo-control pressure in case of failure.

One part of the system is doubled to maintain Normal braking in the event of damage in the hydraulic system in the main landing gear well.

(2) In both cases an electrical anti-skid system (SPAD) based on a comparison between the nose and main gear wheel speeds enables optimum braking to be obtained without skidding or wheel-locking.

The torque of each brake is subject to a reference torque which is a function of pedal travel.

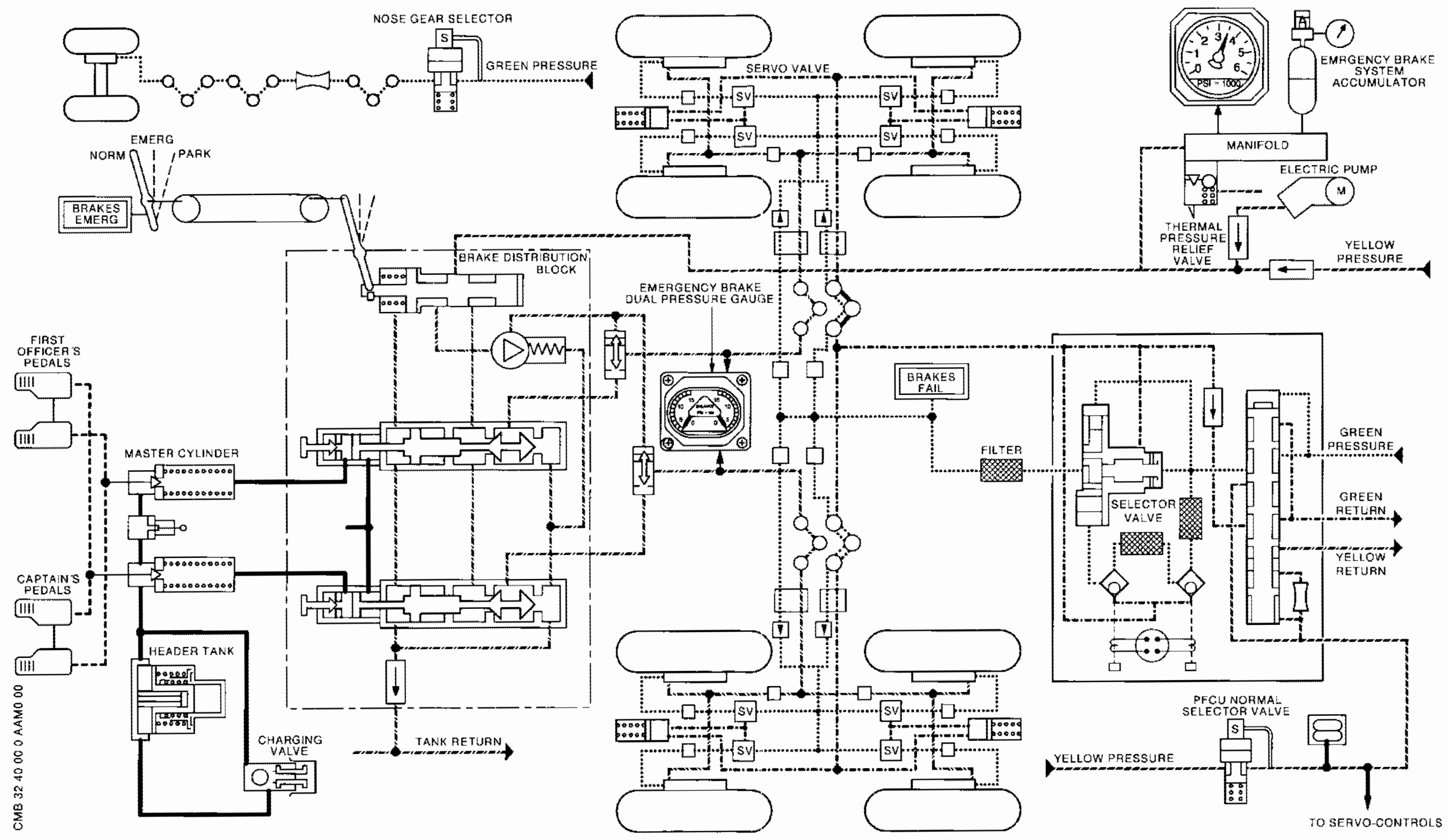
(3) Load-feel proportional to pedal angle is provided by the internal spring in each Emergency braking master cylinder and the effect of control pressure resulting from compression of the springs in the brake distribution block.

A second load threshold at the 12 degree pedal position corresponds to maximum pressure at the brake units.

(4) The main landing gear wheels are automatically braked in flight, when the landing gear Normal control lever is in UP position and LH gear downlocked, during the door opening phase of retraction.

During in-flight braking of the main gear wheels, the brake units are supplied with Normal braking system pressure.

(5) A brake temperature detection and indicating system transmits brake unit temperatures to the Captain's and Flight Engineer's stations.



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Normal and Emergency Braking Hydraulic Systems
Figure 001

C. Emergency braking

(1) Emergency braking is both proportional and differential and does not incorporate electronic control. Control is accomplished by the pedals acting on a self-contained hydraulic system which transmits pedal movements to the braking distributor. Load-feel at the pedals is established in the same way as with Normal braking control.

A second load threshold at the 12 degree pedal position serves to limit Emergency braking pressure. This threshold should not be voluntarily and permanently passed except in the case of acceleration-stop Emergency braking.

(2) Hydraulic pressure distribution is provided either by the Yellow system, or by the Yellow Emergency accumulator. The accumulator can be pressurized on the ground by the aircraft electric pumps or the hydraulic ground power unit. During Emergency braking, the hydraulic system is protected by a thermal pressure relief valve.

D. Parking/Ultimate Emergency Braking

Parking/Ultimate Emergency braking is provided by the Yellow system or by the Emergency accumulator and controlled by the brake selector lever. Maximum braking is applied at the main landing gear brakes.

E. In-Flight Braking

(1) Nose landing gear wheels are automatically braked when the landing gear Normal control lever is in the UP position.

(2) Nose gear wheel braking is ensured by Normal hydraulic supply to the nose landing gear during retraction.

F. Brake Cooling

Each main gear brake unit is cooled by a fan whose motor is installed in the axle of the associated wheel. Fans can only operate with main gear downlocked.

WHEELS - DESCRIPTION AND OPERATION

1. General (Ref. Fig.001, 002 and 003)

A. Main Landing Gear

(1) The main landing gear reinforced wheels are fitted
R with 47 x 15.75 R 22.1 tubeless tyres. They rotate on tapered roller bearings.

(2) The wheel is secured on the axle by a nut which is in turn safetied by a set screw.

(3) The wheel is composed of a hub and a loose flange held by washers and self-locking nuts.

(4) Sealing between these sub-assemblies is ensured by an O-ring seal.

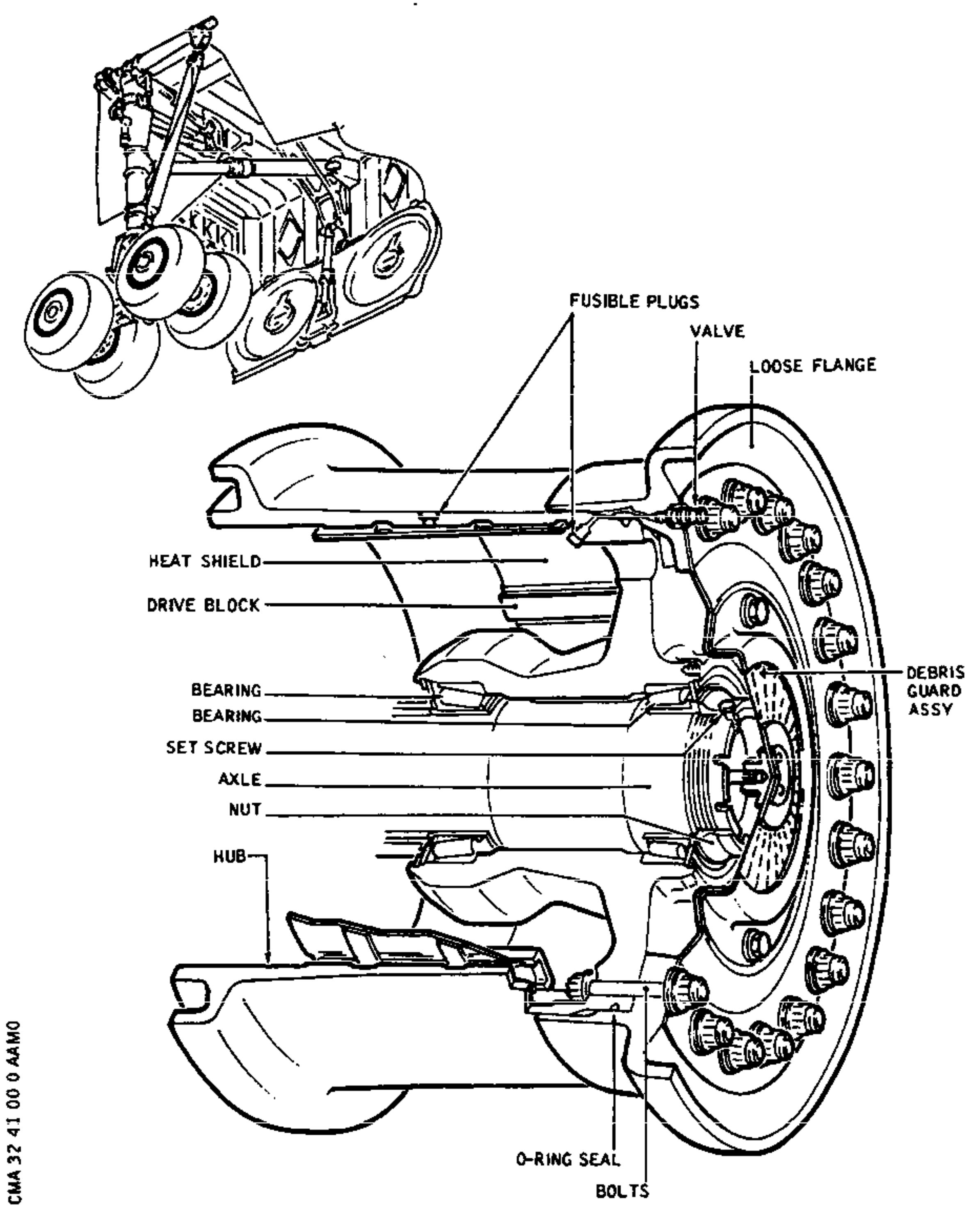
(5) The wheel is fitted with a tyre inflating valve.

(6) Fusible plugs screwed into the hub serve to deflate the tyre in the event of overheating.

R (7) Eleven rotor disc drive block keys are installed around the inside diameter of the inboard sub-assembly.

R (8) A shaft splined into a drive coupling attached to the debris guard assembly drives a tachometer generator controlling the SPAD (advanced anti-skid system).

R (9) A heat shield prevents heat from the brake unit being transmitted to the tyre.



R

Main Landing Gear Wheel
Figure 001

B. Nose Landing Gear

(1) Each wheel is made up of two half wheels held together with high tensile steel bolts and self-locking nuts. Sealing between the two half-wheels is ensured by an O-ring seal.

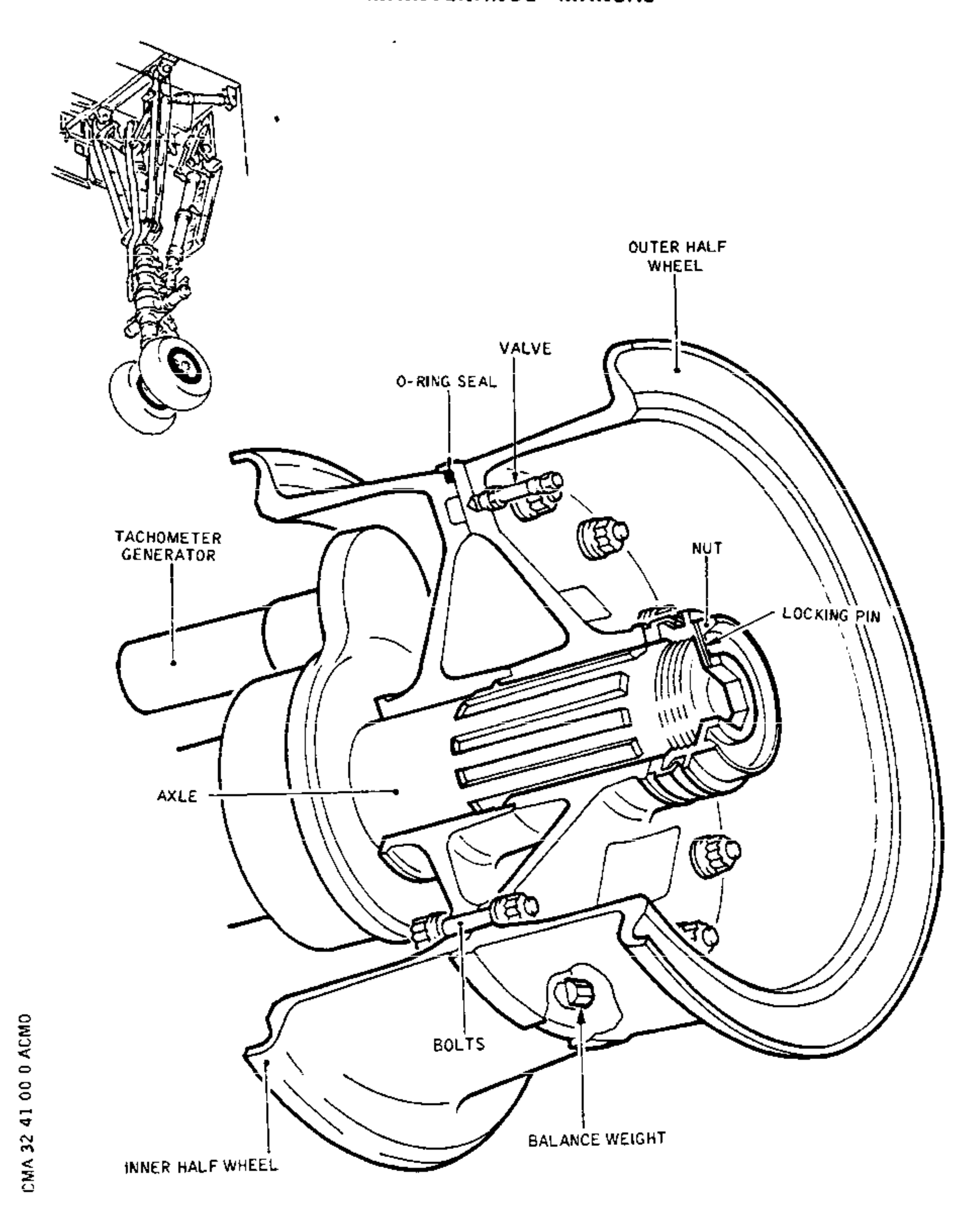
(2) The outer half wheel includes a splined hub, which drives the axle, and a tyre inflating valve fitted
R with an O-ring seal.

(3) The inner half-wheel includes a hub centred on the plain length of the axle.

R (4) The wheel is balanced by two balance weights. A weight
R is bonded in the bottom of one of the recesses provided in each half wheel.

(5) The nose landing gear wheels are fitted with 31 x 10.75 - 14 tubeless tyres. The wheels are secured on the axle by means of a nut. This nut is designed to receive the front deflector attach fitting and is safe-tied by a locking pin.

(6) The axle is mounted on tapered roller bearings. A ring gear incorporated on the axle drives the two tachometer generators controlling the SPAD (advanced anti-skid system) through two pinions.



Nose Landing Gear Wheel
Figure 002

R

C. Tail Gear

(1) Each tail gear wheel is fitted with a 320 x 120 x 4.5 tubeless tyre.

(2) It includes two half-wheels held together by bolts, nuts and washers.

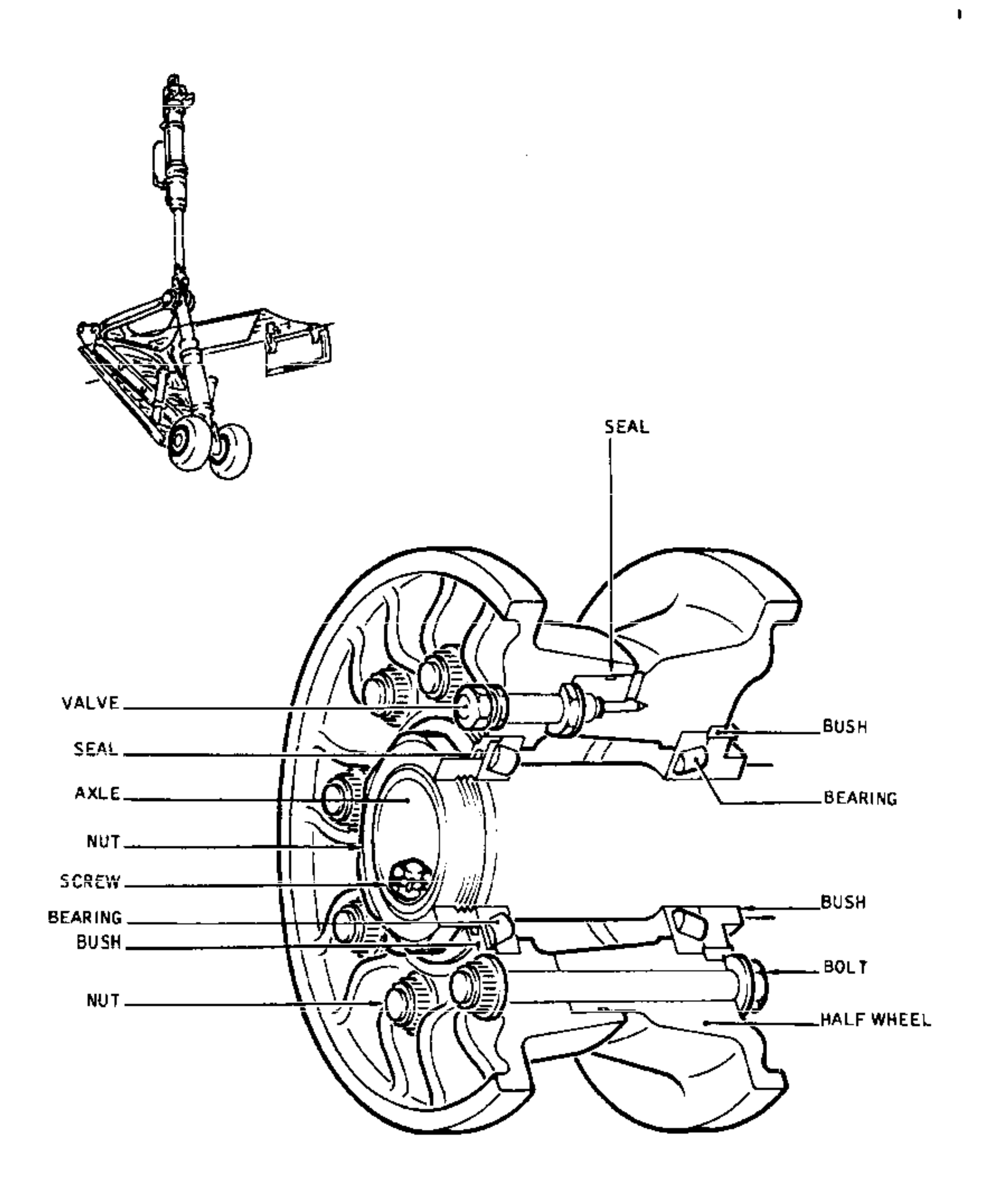
(3) Sealing between the half-wheels is ensured by means of an O-ring seal.

(4) Each half-wheel is fitted with a tapered roller bearing.

(5) The inboard half-wheel bearing outer raceway is retained by a bush cemented in position. The outer raceway of the outboard half-wheel bearing is retained by a bush fitted with seals.
Both these bushes are secured by the half-wheel assembly bolts.

(6) The wheel is fitted with a tyre inflating valve.

(7) At the rocker beam the wheel thrusts against a bush bonded to the axle. Side play is taken up by a nut, which makes it possible to maintain correct bearing clearance and thereby achieve optimum wheel rotation.
R The nut is safetied by a screw.



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Tail Gear Wheel
Figure 003

WHEELS - INSPECTION/CHECK

1. General

RB CAUTION: REMOULD TYRES MUST NOT BE FITTED TO MAIN WHEELS.

B A. It is a MANDATORY requirement to remove any wheel:

B (1) If the tyre pressure is outside the limits laid down
RB in 12-14-32 (or ATP 588 Vol.1).

B (2) If the brake temperature has exceeded 510°C.

B (3) If the aircraft has landed with brake fan inoperative
B and brake not deactivated.

B (4) If an RTO above 100 knots was carried out with brake
B fans inoperative and brake not deactivated.

B (5) If the tyre has been overloaded.

B NOTE: On wheels removed for any of the above reasons
B replacement of the push in type fuse plugs, and
B all the NDT checks called for in the Overhaul
B manual 32-41-11 must be carried out before the
B wheel is returned to service.

B B. This section provides procedures for the inspection and
B check of landing gear wheels and tyres. The wheels can be
B checked while installed on the aircraft, (para 5).
B Additional examinations are made when the wheels are
B removed, (para 6). Tyres can be checked while installed
B on the wheels, (para 7). For inspection of wheels at
B tyre changes refer to vendor manufacturers Component
B Maintenance Manual/Overhaul Manual.

2. Equipment and Materials

	DESCRIPTION	PART NO.
B	Removable Chocks	-
B	Safety Ground Lock NLG	C22127
B	Safety Ground Lock MLG	272387
B	Safety Lock - nosewheel steering	C22646

3. Reference Procedures

RB A. 12-14-32 (or ATP 588 Vol.1) - Tyre inflation

B B. 12-37-00 - Wheel replacement

B C. 32-00-00, Servicing - General Servicing

4. Prepare for Inspection/Check

B A. Check that landing gear ground locks are installed and
B wheels are chocked. Refer to 32-00-00, Servicing for lock
B installation procedure.

5. Examine Wheels (Wheel installed on aircraft)

B A. Examine wheels for cracks, corrosion, damage and paint
B flaking.

B B. Check tie bolts and nuts for security.

B NOTE: Torque on tie bolt nuts is
B 17.63 mdaN (130 lbf ft) (MLG)
B 8.5 mdaN (62.5 lbf ft) (NLG)
B 1.8 mdaN (13.2 lbf ft) (Tail)

B All torque values are for bolts and nuts lubricated
B during assembly.

B C. Examine tyre valves for damage.

B D. Examine wheels for security on axle and freedom of
B rotation. Refer to 12-37-00 for wheel retention nut torque
B values.

B E. MLG wheels assembly only:

B (1) Examine wheels for evidence of overheating.

B (2) Examine core assembly for evidence of cracks and
B distortion.

B (3) Examine debris guard for evidence of cracks,
B distortion and security. Examine the wires of the
B grill for security. Check guard for adequate
B clearance from fan.

B F. NLG wheel assembly only:

B (1) Examine spring clip between nose wheel deflector and
B wheel nut for security and correct location.

B B B (2) Check wheel for excessive spline wear. Max permitted angular movement is 5 mm, (0.2 in), measured at the wheel rim periphery for wheel and axle combined.

6. Examine Wheels (Wheel removed from aircraft)

B B A. Examine wheels per para 5 - Examine Wheels (Wheel installed on aircraft)

B B B. Examine metal parts of wheels for cracks, corrosion, damage, wear and scores.

B C. MLG wheel assembly only:

B B B (1) Check bearings on wheel assembly for evidence of overheating, breakup, damage, cleanliness and sufficient lubrication.

B B (2) Check bearing circlips and excluders for security and damage.

B (3) Examine for blown or damaged fuse plugs.

B (4) Check balance weights for security.

B B (5) Examine debris guard drive coupling for security and damage.

B (6) Examine heat shields for damage and security.

B (7) Check wheel drive blocks for wear and security.

B D. NLG wheel assembly only:

B B (1) Check splines for evidence of wear, corrosion and scoring.

B E. Tail Wheel assembly only:

B B B (1) Check bearings on wheel assembly for evidence of overheating, breakup, damage, corrosion, cleanliness and sufficient lubrication.

B (2) Check bushes for security and damage.

7. Examine Tyres

WARNING: UNDER CERTAIN CIRCUMSTANCES RUBBER FROM THE MAIN WHEEL SEAL CAN COVER THE INFLATION HOLE PREVENTING DEFLATION. FLEET PERSONNEL WHO FIND THIS CONDITION WHEN SENDING A WHEEL/TYRE ASSEMBLY TO THE WHEEL BAY MUST CHALK ON BOTH SIDES OF THE TYRE SIDEWALL "UNABLE TO DEFLATE" (SIMILARLY ANNOTATE THE REMOVAL LABEL). PERSONNEL CHANGING TYRES MUST ENSURE THAT THE TYRE IS FULLY DEFLATED BEFORE STARTING WORK ON THE WHEEL ASSEMBLY. IF ANY DOUBT EXISTS THAT THE TYRE IS NOT FULLY DEFLATED, A FUSIBLE PLUG CORE MUST BE PUSHED OUT FROM ONE OF THE PLUGS IN THE BARREL OF THE WHEEL (USE A 3/32 DIA ROD). ON NO ACCOUNT SHOULD THE WHEEL TIE BOLT NUTS BE LOOSENED WITH ANY AIR PRESSURE IN THE TYRE.

CAUTION: WHEN WHEEL/TYRE ASSEMBLIES ARE SHIPPED IN AIRCRAFT FREIGHT HOLDS TYRE PRESSURES MUST NOT BE MORE THAN 25-30 psi.

A. Examine tyres for wear

(1) NLG & MLG wheel tyres:

Remove from service when any groove shows a remaining depth of less than 2 mm (5/64 in), for more than one quarter of the tyre circumference, or when the tread pattern is worn across all grooves to a depth of less than 2 mm (5/64 ins).

(2) Tail wheel tyre:

Remove from service when first ply becomes visible.

B. Examine tyres for leakage, abrasion, uneven wear, cuts, foreign object penetration, flat spots and separation.

CAUTION: DOUGH PLUG REPAIRS ARE NO LONGER PERMITTED ON ANY AIRCRAFT TYRES ALL CUTS MUST REMAIN UNPLUGGED.

NOTE: In the case of a tread separation without loss of pressure, record in the aircraft technical log, the pressure in the tyre prior to its removal from the aircraft.

Remove from service tyres showing the following conditions:

(1) Blisters, bulges or other evidence of ply separation in tread or sidewall area.

(a) Chevron cutting of tread. Remove when depth of cut is at or greater than 4 mm, (0.16 in).

(b) Sidewall cuts. Remove when length of cut is greater than 25 mm (1.0 in) and/or when cut is at or beyond first cord ply.

(c) Other cuts. Remove tyre when cut is at or greater than 2 carcase plies in depth and/or longer than 25 mm (1.0 in).

(2) Other damage or combination of items above, which might result in tyre failure including penetrations.

C. Check that tyre pressure is within specified limits - refer to 12-14-32 (or ATP 588 Vol.1) - Tyre Inflating.

NOTE: If a new inflation valve core is fitted torque to 8.2 Nm (6 lbf ft) this will ensure correct seating of the core without causing damage to the valve stem.

D. If a tyre is found to be completely deflated, remove both wheels on that axle.

NOTE: If it can be shown that the pressure loss took place after the aircraft was parked and that no rolling took place, then the companion tyre need not be changed.

E. Check if tyre separated from wheel assembly:

If for any reason a tyre is removed from its associated wheel the sidewall of the tyre must be marked with tyre chalk with the following information: wheel serial number, aircraft of removal, position of removal and reason for removal.

NOTE: This information recording is essential in order that records of mandatory carcase life may be maintained.

8. Wheels - Removal/Installation

For details of removal/installation of nose, main and tail gear wheel and tyre assemblies refer to 12-37-00.

R

9. Wheel and Tyre Check

A. Check tyre Inflating Pressure

(1) Nominal tyre inflating pressure (Ref. 12-14-32,
R para 2.A.(1), and ATP 588 Vol.1).

(2) Tyre identification and characteristics (Ref. 12-14-32
R para 2.A.(2), and ATP 588 Vol.1).
R

B. Wheel Removal/Action Required

In addition to removal for damage or tyre replacements,
R wheels must also be replaced for insufficient tyre pressure
R (Ref. 12-14-32 and ATP 588 Vol.1).

R NOTE: Wheels removed for under-inflation must also undergo
R non-destructive tests (Ref. Overhaul manual 32-41-11).

R

BRAKES - DESCRIPTION AND OPERATION

1. General

Each main gear wheel is fitted with a brake unit. All eight brake units are identical and can be installed indiscriminately on any of the main gear wheels.
The nose gear wheels are fitted with a brake unit installed at RH wheel. It serves for braking of both wheels through the common axle.

A. Main Gear (Ref. Fig.001 and 002)

(1) Description

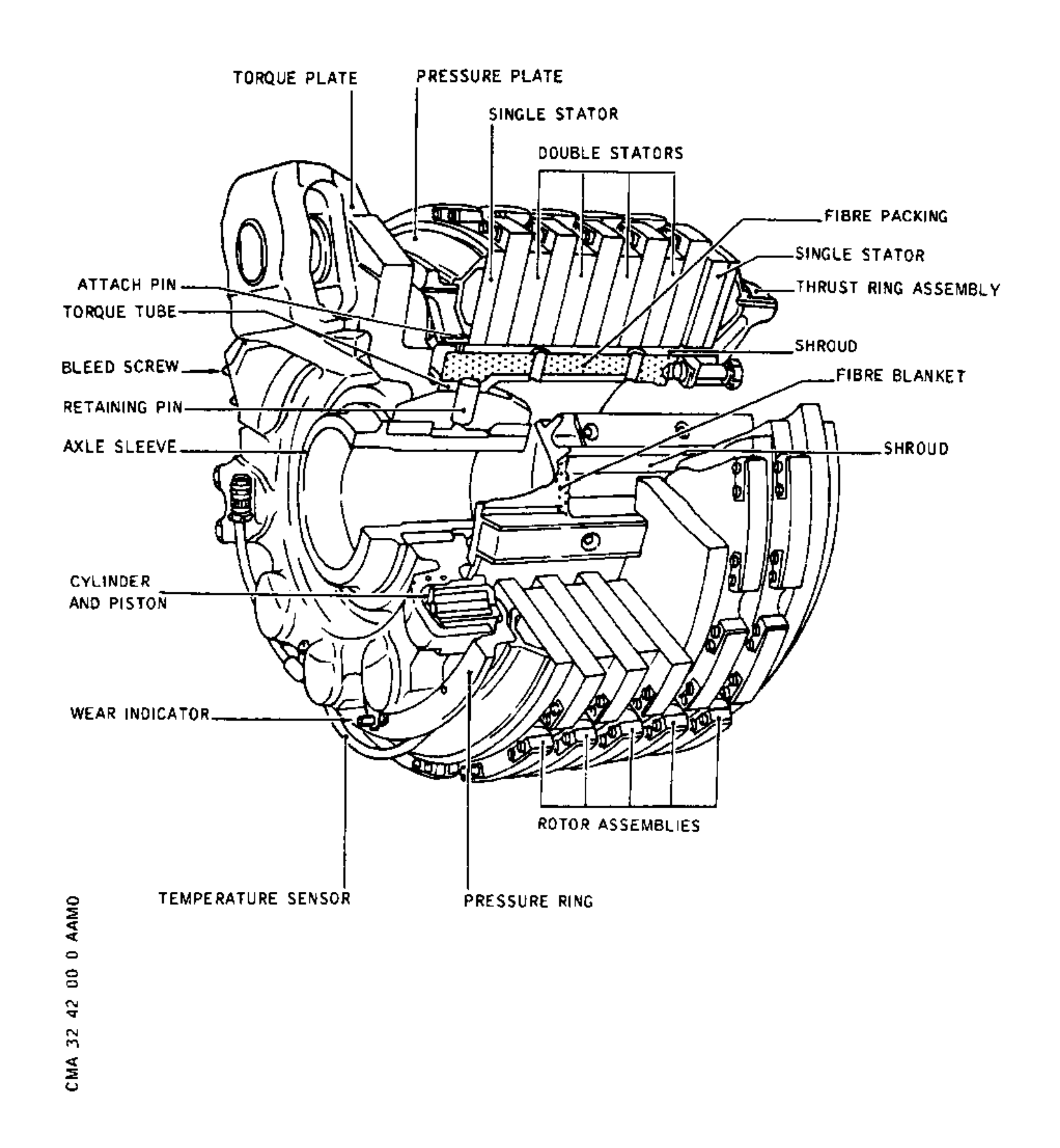
Each main gear wheel includes a brake unit, comprising :

(a) A small diameter torque plate connected to the bogie beam. This plate absorbs brake torque.

(b) A torque tube attached to a shoulder on the torque plate by means of retaining pins. The tube outer wall includes a series of splines. These splines mate with the stator disc slots. The in-
R terior of the splines is filled with fibre packing and covered by a shroud. The torque tube is covered with insulating fibre blanket.

(c) Ten cylinders and pistons laid out concentrically are screwed into the torque plate inner face. Five cylinders and pistons serve during Normal braking, and the other five during Emergency braking. Each piston incorporates an automatic wear compensator.
A retraction pin fitted to the bottom of the cylinder and held by friction bushes installed in a guide sleeve. This guide sleeve is acted on by disc springs which return the piston to brake-release position through a retaining collar as soon as pressure is no longer applied to the piston. When wear has reached a certain limit, the piston moves the guide sleeve along the retraction pin and remains in the new position.

(d) Five carbon rotor discs and six carbon stator discs providing a heat sink. These enable optimum brake efficiency to be obtained by an even distribution of heat between rotors and stators.
R The heat pack comprises five identical rotor



R

Main Gear - Brake Unit
Figure 001

assemblies located alternately between a single stator assembly, four identical double stators and a single stator. The tenon slots of the rotors are reinforced with steel clips, each clip being secured by two bolts and two nuts. The bolt heads are welded to the clips and the nuts to the bolts for locking. A spacer is provided with each brake unit which may be installed with heat pack to utilize the full effective life of the heat pack.

(e) A platinum wire temperature sensor screwed directly into the first stator.

(f) A pressure ring and a pressure plate held together by pins. Piston pressure is applied to this assembly and loads are transmitted circumferentially to the rotors and stators.

(g) A thrust plate located at the end of the torque tube takes up normal braking thrust loads imparted by the pistons.

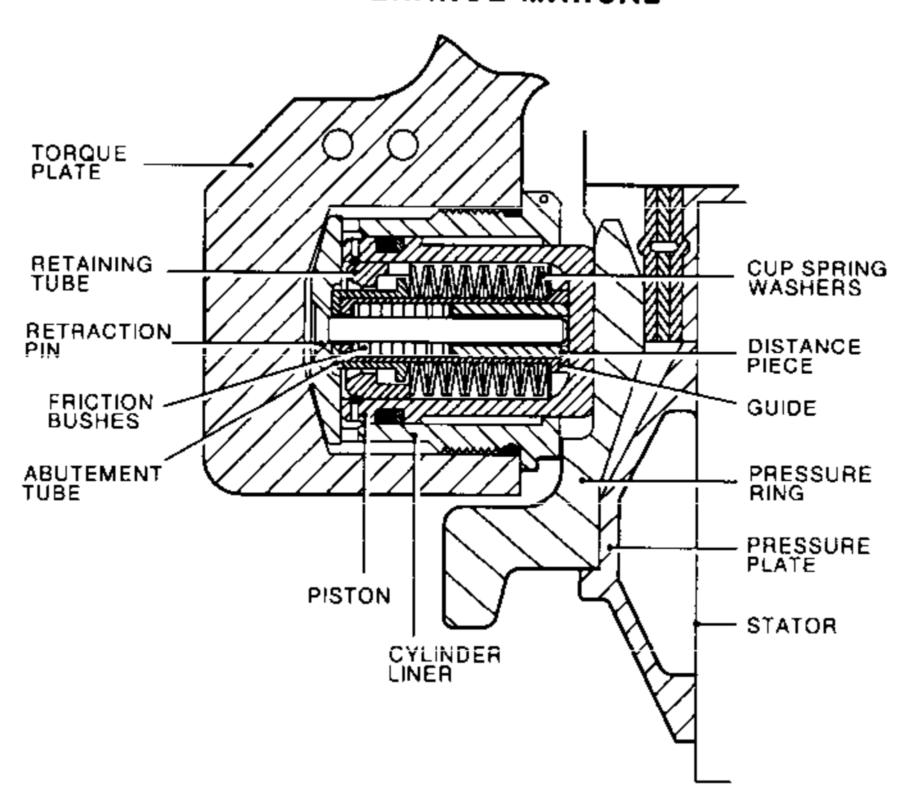
(h) One wear indicator installed on the pressure ring serves to check wear of the rotor/stator assembly.

(j) Four bleed screws provided in the torque plate serve for bleeding of the Normal and Emergency hydraulic braking systems and brake unit pistons and cylinders.

(2) Operation

Five out of the ten brake unit pistons and cylinders are pressurized during Normal braking. The other five are pressurized during Emergency and Parking braking. When the brakes are applied, hydraulic pressure is ported to the cylinders and movement of each piston and retaining tube compresses the disc springs. Primary movement is limited by the clearance between the abutment tube and the retaining tube. Any movement in excess of this resulting from wear on the rotors or stators draws the friction bushes along the retraction pin.

The pistons act on the pressure-ring/pressure-plate assembly which then moves. Movement of this assembly causes the stators to thrust against the rotors driven by the wheel. The rotors and stators clamp against the thrust-plate/torque-tube assembly.



CMB 32 42 00 0 ACM0 00

Cylinder and Piston - Operation
Figure 002

When the brakes are released, the disc springs withdraw the piston by an amount equal to the distance that the disc springs were compressed. The clearance between the retaining tube and the abutment tube (which is the correct working clearance for the brake) is restored. The working clearance for the brake is thus maintained as the rotors and stators wear.

The pressure-plate/pressure-ring assembly is no longer clamped and the rotors are free to turn.

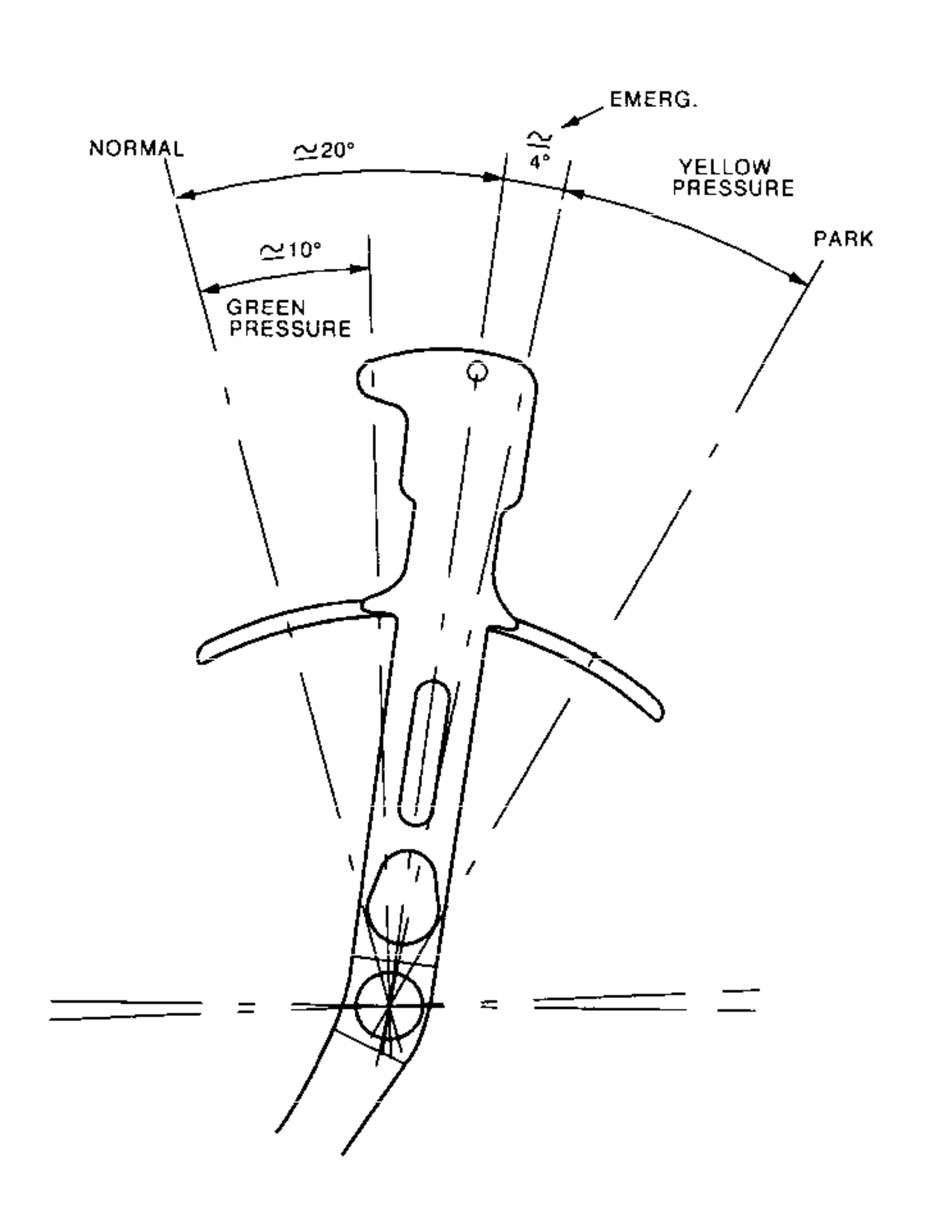
B (3) Brake selector control lever operation.

B The sequences of operation of the brake selector
B control lever are shown in diagramatic form in
B (Ref. Fig. 003).

B - The three positions of the selector lever are as
B follows:
B . NORM
B . EMERG
B . PARK

B The selector lever is spring loaded to the NORM

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Brake Selector Control Lever Positions
Figure 003

position.

(a) Illumination of BRAKE EMERG amber light and/or BRAKES red light indicating that no hydraulic fluid is ported to the normal braking system.

(b) Sequential control of NORMAL and EMERGENCY hydraulic power supplies is so designed as to provide against overstressing or deformation of the brake structure. (Likely to be induced by concurrent application of pressures by normal system pistons and emergency system pistons in the event that the selector control lever would be displaced with the brake control pedals depressed).

Concurrent application of both pressures on the two systems may occur whenever the brake control lever is moved from EMERG to NORM (due to the more pronounced emergency system pressure drop, slow pressure decay in emergency system and rapid pressure build-up in normal system).

Whenever a slow selection is in process, the control is so adjusted as to admit the maximum permissible pressure consistent with brake system operation i.e. 220 bars with both systems supplied.
Consequently, as the brake selector control lever is slowly moved from NORM to EMERG, application of brakes is ineffective for a comparatively short time lag (0.35 seconds approx). This is induced by the reversed condition (rapid pressure decay in normal pressure and comparatively slow pressure build-up in emergency system due to emergency system pressure drops).

LEVER MOTION		SEQUENCE OF EVENTS	OPERATING PROCEDURE(REF)
NORM	0°	With the pedals depressed, the brake units are supplied with hydraulic pressure through the normal system.	- Any selection of the brake control from NORM to EMERG should be performed with the engines at low RPM.
	10°	Normal system pressure is not ported to the brake units. The emergency brake distribution block is not in the open position. Braking action proves ineffective even though control pedals are depressed.	- In order to reduce the time lag during which brakes are ineffective, it is recommended that the foregoing selection be made with the pedals depressed to the threshold. In case the aircraft would possibly move, smooth stoppage of
	20°	Emergency braking is effective whenever control pedals are depressed.	the latter will be obtained through emergency braking pressure, as a result of the comparatively slow build-up of that pressure.
EMERG	24° 30'	The push-button is to be depressed prior to moving the brake selector control lever to the PARK position. Throughout this operation emergency braking is available, being distributed via a shuttle valve and pressure reducing valve at a constant pressure of 220 bars, the progressive braking distributer being by-passed NOTE:- Shuttle valve & pressure reducing valves are an integral part of the distribution block.	
PARK			Due to the non-gradual
NORM		With the aircraft at a stop, the brake selector	nature of the PARK position such a position is only to be used when

LEVER MOTION		SEQUENCE OF EVENTS	OPERATING PROCEDURE(REF)
PARK		control lever may be moved from NORM to PARK, provided that the push-button be depressed to over-ride the EMERG position hold detent.	aircraft is either fully stopped or in case of dire necessity.
PARK NORM		The push-button is to be depressed so as to disengage the PARK position. The brake selector control lever will directly move from PARK to NORM position as the EMERG position is overriden under action of the spring actuated mechanism.	From the PARK position the lever must always be passed through NORM position so as to take advantage of EMERG position hold detent. The EMERG position which is obtained by holding the lever by hand must not be used as this might result in improper positioning and no hydraulic fluid being ported to the hydraulic system.
PARK EMERG		To take advantage of the correct engagement of the brake selector control lever in the hold detent, this lever must beforehand be moved to NORM, then to the EMERG position.	
EMERG NORM		The push button is to be depressed so as to disengage the EMERG position as the lever is spring loaded to the NORM position it can either be allowed to return, automatically or be pushed forward.	Any movement of the aircraft is precluded and a normal application of brakes with the pedals depressed to the threshold will be completely smooth.
		However, if the lever is prevented from returning to the NORM position automatically or held in an intermediate position the following sequence of events will apply.	
EMERG	24°30' 20°	Emergency brakes available.	The brake selector control lever must not be held by hand in the in-

LEVER	MOTION	SEQUENCE OF EVENTS	OPERATING PROCEDURE(REF)
		The aircraft may move forward as emergency brake pressure is shut off and starts to dissipate and normal pressure is not yet available.	termediate position, i.e. between EMERG and NORM. However, if for any reason this occurs the brake pedals must be released prior to reaching the NORM position so as to take advantage of the pressure gradient.
	10°		
		With the pedals depressed to the threshold, the normal braking pressure will be applied at a maximum permissible pressure figure (220 bars). Normal braking pressure build-up will be quite fierce, such as with the pedals being depressed to the threshold, the pressure gradient gives way to the continuous braking signal fed into the brakes overload control unit.	Detection of overload on the wheels entails automatic release of normal brake pressure & subsequent loss of braking. The brake selector control lever is then to be returned to the EMERG position so as to bring the aircraft to a stop.
NORM	0°		
		During a ground manoeuvre, surges and possibly overloads on all gear wheels may result from the pressure of such a condition	

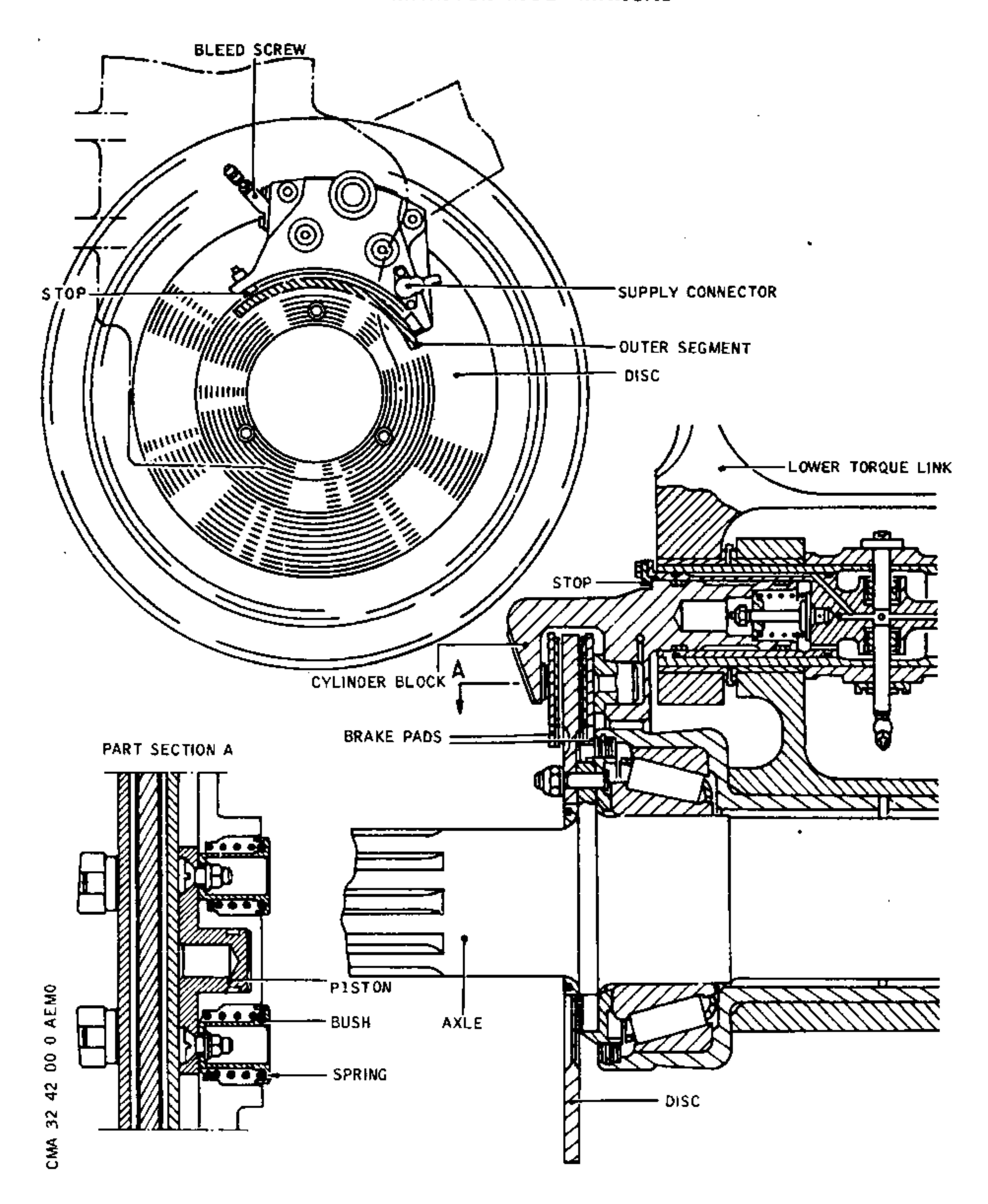
Table 1. Brake Control Lever Selection analysis.

B. Nose Gear (Ref. Fig.004 and 005)

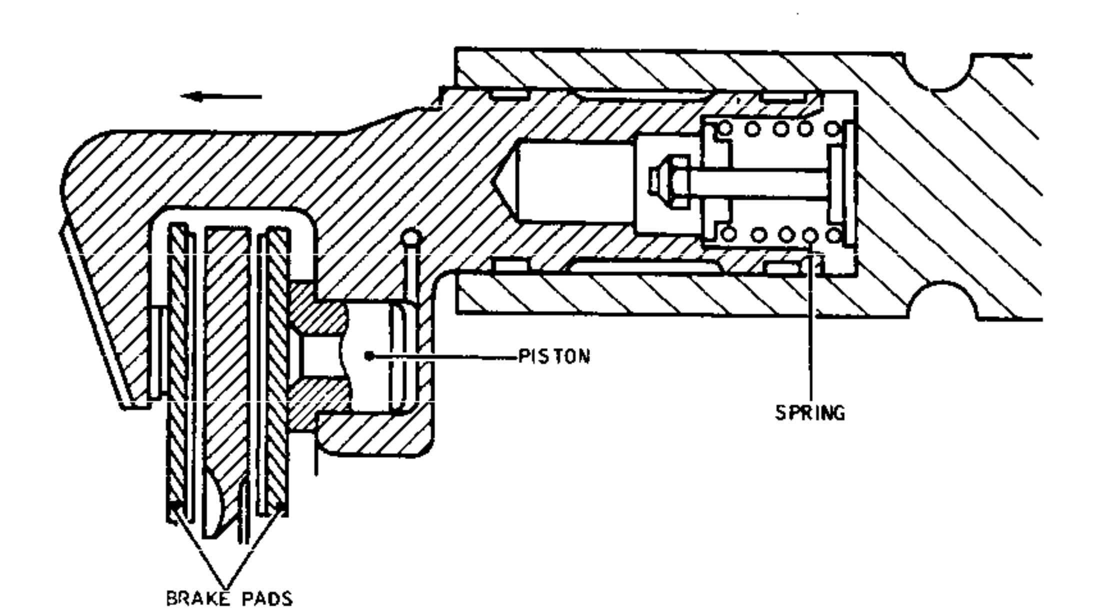
(1) Description

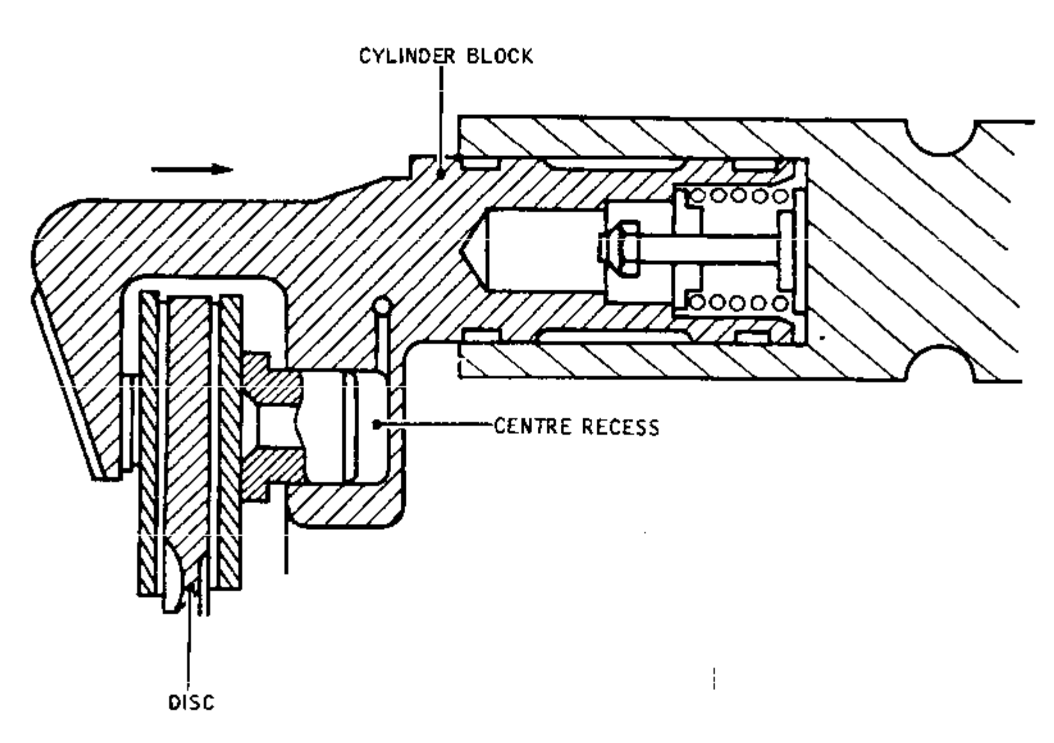
The brake unit is held laterally by an adjustable stop thrusting on the outer segment face. The brake unit cylindrical section is housed in the torque link lower shaft and retained by a stop.

This includes :



Nose Gear - Brake Unit
Figure 004





CMA 32 42 00 0 AGM0

Nose Gear Brake Unit - Operation
Figure 005

(a) A cylinder block fitted with a piston, a bleed screw and a supply connector.
The supply connector includes a metering valve serving to restrict fluid flow to the brake. The piston is installed in the centre recess. The front face of the piston is fitted with two spring-loaded rings.

(b) Two brake pads installed on two swivel pins. The pads are lined with sintered metal directly applied to the pads.

(c) A disc attached to the axle by three bolts.

(2) Operation

During braking, pressure is applied to the piston as well as to the bottom of the centre recess.
The piston clamps the inner brake pad against the disc. The reaction thus created causes the cylinder block to move together with the outer brake pad, the pad then clamps against the disc.

During brake release, the piston is returned to its initial position under spring pressure. The cylinder block is returned under spring pressure to brake-released position against the associated stop.

NOTE : This brake does not include an automatic pad wear compensator. In such case wear on these pads results in greater travel of the piston and cylinder. Nevertheless, pressures are more or less equal on both faces of the disc.

BRAKES SERVICING

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

These procedures shall be adopted to :

- Isolate a brake unit
- Inhibit WHEELS O/HEAT warning for one brake unit.

2. Isolation of a Main Gear Brake Unit

A. Equipment and Materials.

DESCRIPTION	PART NO.
2 Blanking Caps	AN 929.4
2 Blanking Caps	AN 929.6
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	
Wheel Chocks	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Chock the aircraft wheels.

(3) On centre console, place brake selector lever in NORM position and prohibit operation of brakes by displaying a warning notice.

(4) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(6) Depressurize Emergency brake accumulator by means of valve 3661, access door 151 DB.

(7) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(8) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R R	REAR OUTER WHEELS BRAKE CONT		G 183	S17
R R	FWD OUTER WHEELS BRAKE CONT		G 184	S18
R R	WHEELS 5 & 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
R R	WHEELS 6 & 7 A/SKID & ADAPT AMPS SUP		G 188	G15
R R	REAR INNER WHEELS BRAKE CONT		G 181	C 9
R R	FWD INNER WHEELS BRAKE CONT		G 182	C10
R	WHEEL BRAKE "B" SYS CONT		G 132	D 9
R R	WHEELS 2 & 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
R R	WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP		G 186	F10

(9) If a forward brake unit is to be isolated, disconnect forward deflector at its lower attach point (Ref. 32-11-12, Removal/Installation), swing up deflector and secure to landing gear leg.

C. Procedure (Ref. Fig. 301)

R (1) Disconnect and remove the two supply hoses between the
R brake unit and safety valve base plate. Fit blanks to
R the hoses and retain them with the aircraft.

(2) Blank off ports on brake unit and safety valve base plate using blanking caps.

D. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Remove safety clips and tags and reset the circuit breakers.

(3) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

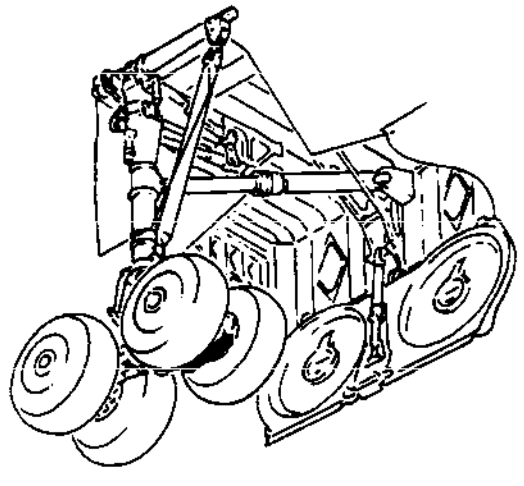
(6) On centre instrument panel, check that BRAKES FAIL and BRAKES EMERG warning lights are off.

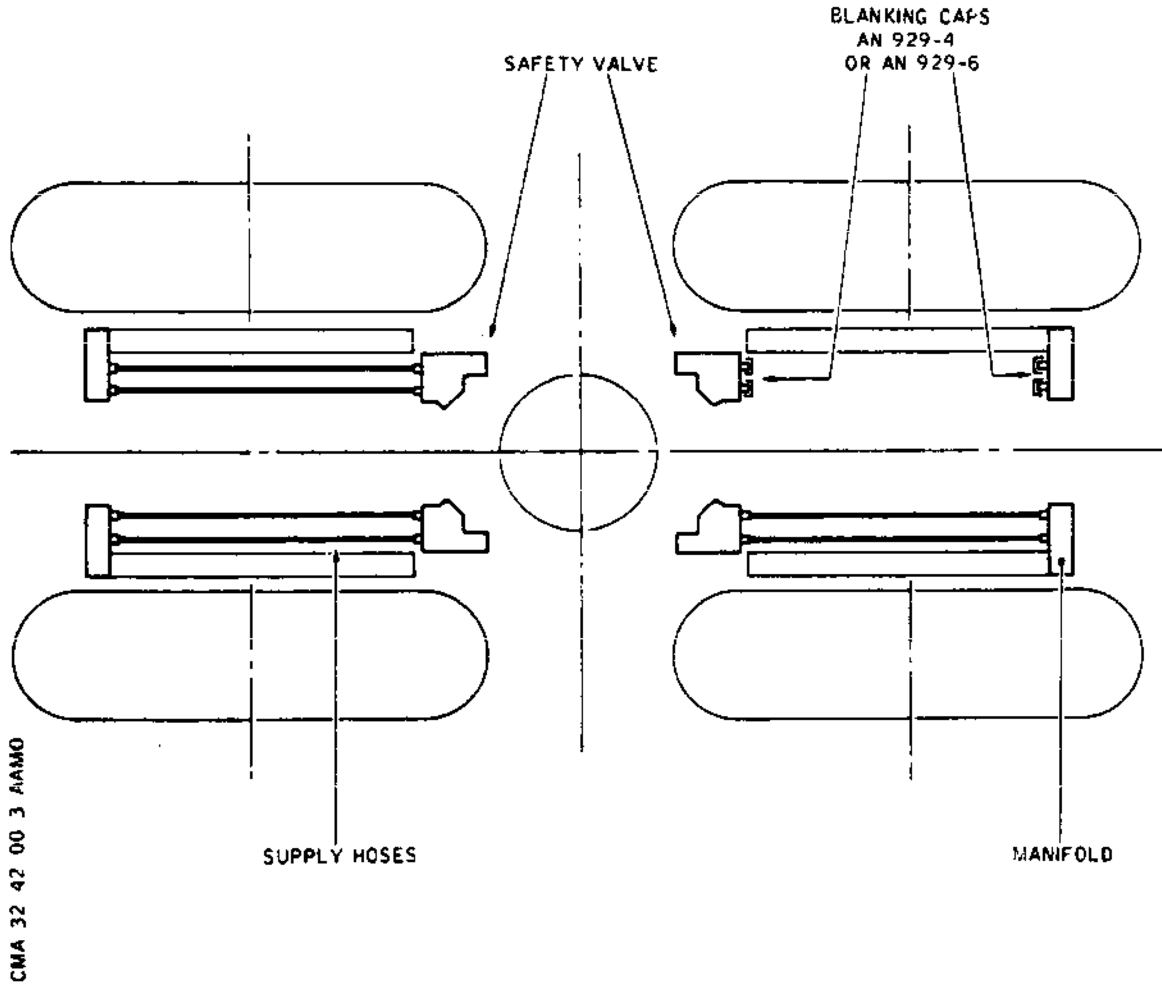
(7) Depress pedals and make certain that BRAKES FAIL warning light remains off.

(8) Check blanking caps installed for leakage.

(9) On centre console, place brake selector lever in PARK position.

(10) On centre instrument panel, check that BRAKES EMERG warning light comes on and that BRAKES FAIL warning light remains off.





R

Brake Unit Isolation
Figure 301

(11) Check blanking caps installed for leakage.

(12) On centre console, place brake selector lever in NORM position.

E. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Remove warning notices and close access doors.

(5) If a forward brake unit has been isolated connect forward deflector at its lower attach point (Ref. 32-11-12, Removal/Installation).

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3. Inhibition of WHEELS O/HEAT Warning for One Brake Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Shunt	-
Circuit Breaker Safety Clips	-

B. Prepare

(1) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8
WHEEL O/HEAT IND	15-215	G 335	F 7

C. Procedure

(1) Disconnect electrical plug from temperature sensor of brake unit concerned.

(2) Shunt plug terminals A and B.

R (3) Protect the plug and securely stow on the adjacent structure.

(4) Isolate brake unit (Ref. paragraph 2).

(5) Remove safety clips and tags and reset circuit breakers.

D. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On Flight Engineer's panel, on BRAKES TEMP indicator, make certain that the warning light corresponding to the brake unit concerned is off.

(3) On First Officer's instrument panel, WHEELS O/HEAT warning light is off.

E. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

MAIN GEAR BRAKE UNIT - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

As the eight brake units are identical and can be installed on any main gear wheel axle, the removal/installation of one brake unit only is described in this topic.

B Replacement brake units will be in packing case P/N ML18288.
B With the packing case lid removed the brake unit can be com-
B pletely assembled mechanically and hydraulically on the air-
B craft without removing the packing case, it will also align
B the discs for wheel fitment. A spare packing case must be
B fitted to the worn brake unit before removal from the air-
B craft.

2. Main Gear Brake Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Wheel Chocks	
Nose and Main Gear Wheel Change Jack (Inflated Tyres)	07-20-0001
Fixture - Alignment, Brake Disc	E920157000

DESCRIPTION	PART NO.
Sleeve - Wheel Axle Protection, LH	253900/78
Sleeve - Wheel Axle Protection, RH	253800/78
Safety Clips	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic, Power and Preliminary Testing	EMH398E
Tools - Brake Torque Plate Attachment.	AM26676 ; A0121169
Blanking Plugs/Caps	
Hydraulic Fluid Recovery Container	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	
Lockwire Dia. 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Common Grease (Ref. 20-30-00, Product No.051)	
Common Grease (Ref. 20-30-00, Product No.057)	

B. Prepare

(1) Take precautions described in the previous WARNING paragraph.

(2) Chock the aircraft wheels.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) On centre console, make certain that brake selector lever is in NORM position.

(5) Jack up the axle concerned using jack 07-20-0001.

NOTE : If a forward brake unit is to be removed, disconnect front deflector at its lower attach point (Ref. 12-37-00).

(6) Remove brake fan (Ref. 32-47-12, Removal/Installation).

(7) On centre console, place brake selector lever in PARK position.

(8) Remove wheel corresponding to brake unit to be removed (Ref. 12-37-00).

(9) Install sleeve 253800/78 or 253900/78 corresponding to wheel axle concerned.

(10) On centre console, place brake selector lever in NORM position.

(11) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R R	WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
R	WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8
R R	WHEEL O/HEAT IND	15-215	G 335	F 7
R R	HYD GRND CHECK OUT SEL VALVE OUT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.

IF A HYDRAULIC GROUND POWER UNIT IS CONNECTED, DISPLAY A WARNING NOTICE ON THIS UNIT, PROHIBITING PRESSURIZATION OF AIRCRAFT HYDRAULIC SYSTEMS.

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Open door 151DB and depressurize Emergency brake system through valve 3661.

(14) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap brake unit temperature sensor plug (13).

R (2) Remove electrical connector (17) and support plate (16).

(a) Remove nuts (10) and bolts (9).

(b) Cap connector (17).

(3) Disconnect hydraulic lines from brake unit manifold (14), and blank off with caps.

(4) Disconnect brake torque arm (4) from brake unit (2).
R Remove and discard cotter pin (6). Remove and retain
R nut (5), pin (1) and seals (3).
R
R NOTE: Draw brake unit off the axle to permit removal of pin (1).

(5) Support brake torque arm (4) and remove brake unit (2).

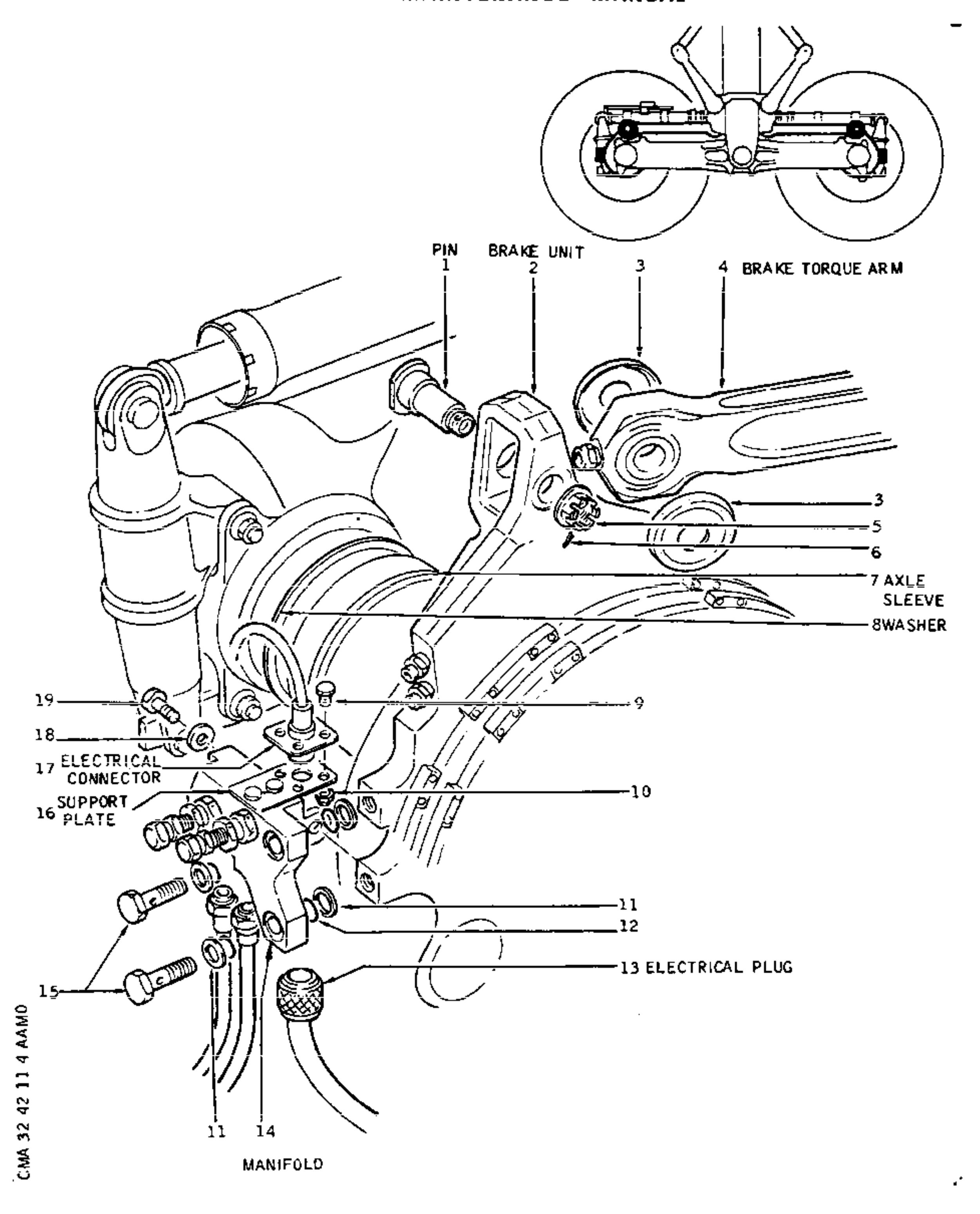
(6) Remove sleeve 253800/78 or 253900/78.

(7) Remove axle sleeve (7) and washer (8).

D. Preparation of Replacement Component

NOTE: The replacement brake unit is filled with product No.011 (Ref. 20-30-00).

During preparation and installation operations any contamination of contact faces by hydraulic fluid, grease, etc. must be avoided.



Main Gear Brake Unit
Figure 401

(1) On removed brake unit :

(a) Cut and remove lockwire, remove bolt (19) together with washer (18).

(b) Cut and remove lockwire, remove fluid passage (banjo) bolts (15) together with seals (12) and seal retainer (11).

(c) Remove manifold (14).

(2) On replacement brake unit :

(a) Remove storage plugs and install manifold (14) on brake unit.

(b) Install fluid passage (banjo) bolts (15) fitted with new seals (12) and seal retainers (11). Torque fluid passage (banjo) bolts (15) to 15 lbf.ft. (2.033 m.daN).

(c) Install washer (18) and bolt (19).

(d) Wirelock fluid passage (banjo) bolts (15) and bolt (19) (Ref. 20-21-13).

E. Install

(1) Lubricate axle and axle sleeve (7) with Product No.051.

(2) Install washer (8) then axle sleeve (7) on axle.

(3) Install sleeve 253800/78 or 253900/78.

(4) Slide brake unit onto axle.

NOTE : Do not slide brake unit fully home until pin (1) has been installed.

(5) Connect brake torque arm (4) to brake unit (2).

B (a) Lubricate brake unit lug with Product No.051.

(b) Insert the brake torque arm spherical bearing fitted with seals (3) into the brake unit lug.

B (c) Lubricate pin (1) with Product No.051.

(d) Make certain that seals (3) are in position and install pin (1), with head towards pitch damper.

R
RB (e) Lubricate nut (5) with product No.051 and install. Torque nut (5) to between 20 and 60 lbf ft (2.711 and 8.134 mdaN).

R

R (f) Safety nut (5) with a cotter pin (6).

(6) Slide brake unit home.

(7) Attach electrical connector (17) to support plate (16) with bolts (9) and nuts (10). Tighten nuts (10).

(8) Connect temperature sensor plug (13) to brake unit.

(9) Remove blanking caps and connect hydraulic lines to manifold (14).

R
R
R CAUTION: WHEN INSTALLING BRAKE HOSES, ENSURE A CLEARANCE IS MAINTAINED BETWEEN EACH HOSE ASSEMBLY.

(10) Lubricate brake unit lug and rod hinge with product
B No.051.

(11) Lubricate brake torque arm hinge, sliding tube, and brake unit hub with product No.051.

(12) Remove safety clips and tags and reset circuit breakers.

F. Tests

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On First Officer's instrument panel, make certain that WHEELS O/HEAT warning light is extinguished.

(3) On Flight Engineer's panel, on BRAKES TEMP indicator, the eight red lights are off.

(4) On Flight Engineer's panel, on BRAKES TEMP indicator, press, hold a moment, then release TEST pushbutton.

(a) On BRAKES TEMP indicator make certain that the temperature indicator reads 270°C ± 20°C and the eight red lights illuminate while TEST pushbutton is pressed.

(b) On centre instrument panel, WHEELS O/HEAT warning light comes on while TEST pushbutton is pressed.

(5) De-energize the aircraft electrical network (Ref. 24-41-00, Servicing).

NOTE: If a forward brake unit has been installed, connect front deflector at its lower attach point (Ref. 12-37-00).

G. Close-Up

(1) Remove sleeve 253800/78 or 253900/78.

(2) Align the rotors using fixture E920157000.

(3) Take the precautions described in the previous WARNING paragraph.

(4) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(5) Connect hydraulic ground power unit to Yellow hydraulic system.

(6) Remove warning notices.

(7) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).
Check that Emergency brake accumulator is correctly charged.

(8) Shut down and disconnect hydraulic ground power unit from Yellow hydraulic system.

(9) On centre console, place brake selector lever in PARK position.

(10) Remove fixture E920157000.

(11) Install wheel (Ref. 12-37-00).

(12) On centre console, place brake selector lever in NORM position.

(13) Install brake fan (Ref. 32-47-12, Removal/ Installation).

(14) Remove jack 07-20-0001.

(15) Bleed Normal braking system (Ref. 32-43-00, Servicing).

(16) Bleed Standby/Emergency braking system (Ref. 32-44-00, Servicing).

(17) Replenish hydraulic tanks (Ref. 12-12-29).

(18) Disconnect electrical ground power unit.

(19) Close access doors.

B H. Brake change Procedure using Transit Case - ML 18288
B (Ref. Fig. 402)

B (1) Refer to para 1.B. for preparation and wheel
B assembly removal.

B (2) Locate spare brake case release handle (1), remove lid
B (2) and centre pillar attachment plate (3). Using
B wheel change trolley hoist light case at attachment
B point (4) and slide over brake unit and axle.

B (3) Align box so that torque rod is in correct position.
B This is important as it makes for easy removal of
B brake in workshops.

B (4) Rotate and locate the four retaining clamps (6) so
B that they retain the pressure plate and hand
B tightening nut (7).

B (5) Disconnect torque rod, temperature sensor and brake
B hydraulics (Ref. 32-42-11 para. C. Remove).

B (6) Remove brake complete with case from axle. Locate
B centre pillar attachment plate (3) in bottom of case,
B attach and retain lid (2) then remove from wheel
B change trolley.

B (7) Lift replacement brake unit/case at attachment point
B (4) using wheel change trolley hoist. Adjust if
B necessary wheel change ties to steady brake unit and
B assist when fitting to axle.

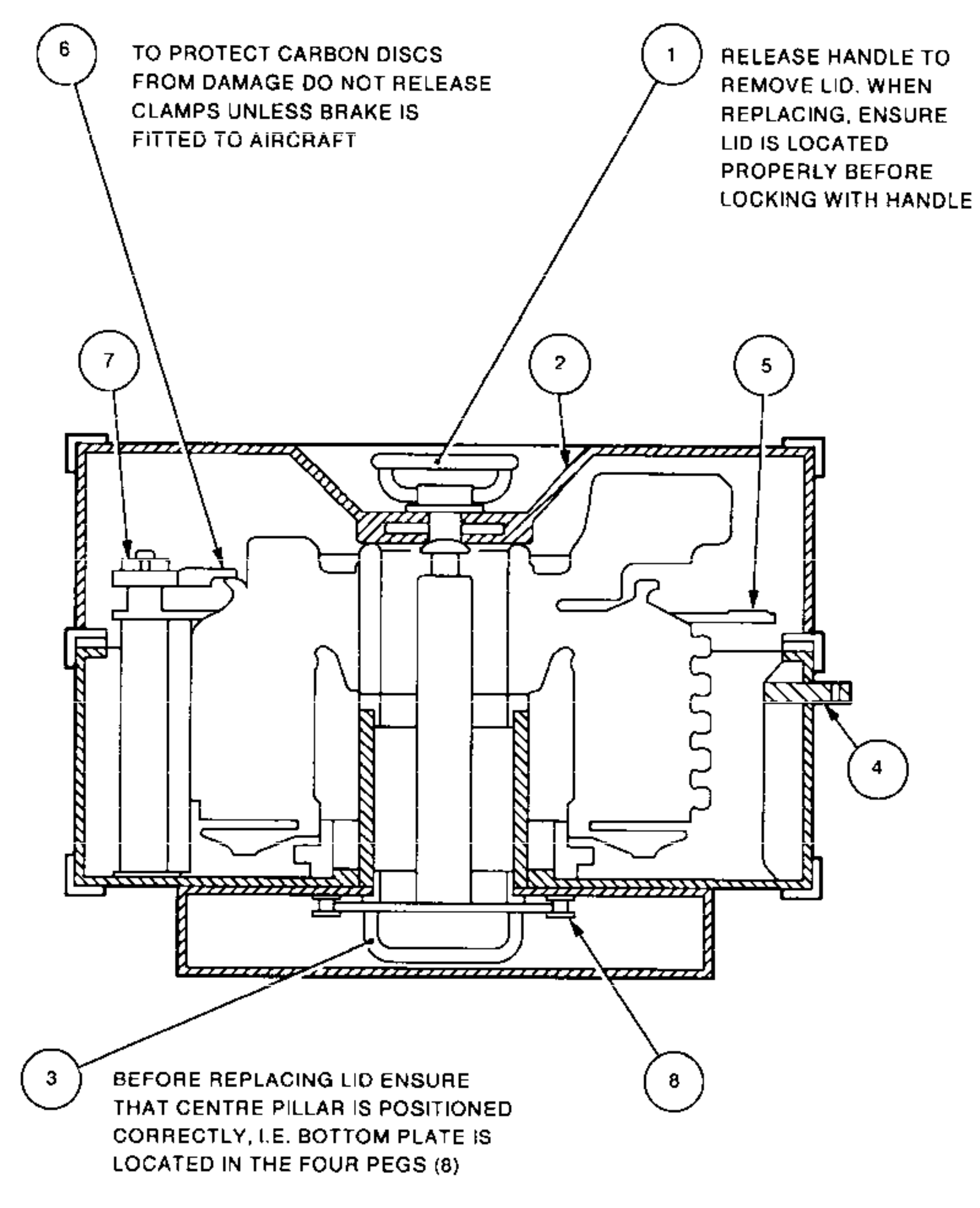
B (8) Release brake case handle (1) remove lid (2) and
B centre pillar attachment plate (3).

B (9) Raise brake case to align brake unit with axle and
B slide on axle after lubricating with product No.051.

B (10) Connect brake torque rod, temperature sensor and brake hydraulics (Ref. 32-42-11 para. E. Install) and perform electrical tests.

B (11) Referring to 32-42-11 para G. Close-Up procedures, the brake case replaces fixture E920157000 and does not require removal until wheel installation, then loosen nuts (7) and release pressure plate retaining clamps (6) by rotation through at least 90°, withdraw brake case and wheel change trolley. Re-assemble case and return to stores for future use as spare brake case.

B (12) Refit wheel assembly and bleed brake (Ref. 32-42-11 para. G. Close-Up).



R

Brake Unit Case ML18288
Figure 402

MAIN GEAR BRAKE UNIT - INSPECTION/CHECK

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Brake unit visual check.

R

2. Brake Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Wheel Chocks	-
Electrical Ground Power Unit	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Check that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
REAR OUTER WHEELS BRAKE CONT		G 183	S17
FWD OUTER WHEELS BRAKE CONT		G 184	S18
RB WHEEL BRAKES TEST IND & SUP		G9001	S15
WHEELS 5 & 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 & 7 A/SKID & ADAPT AMPS SUP		G 188	G15
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
REAR INNER WHEELS BRAKE CONT		G 181	C 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 & 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP		G 186	F10
WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
RB WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
PLTS LT TEST SUP		L1001	E14
WHEEL O/HEAT IND		G 335	F 7

(3) Position wheel chocks.

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(5) On centre console, make certain that brake selector lever is in NORM position.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Checks (Ref. Fig. 601)

(1) On centre console, place brake selector lever in PARK position.

(2) Check brake for signs of hydraulic leaks and dimension 'D' of the wear indicator stand-out beyond the support plate.

(a) Change, repair or lockout brakes that leak hydraulic fluid.

<u>WARNING</u>: IT IS DANGEROUS TO USE A BRAKE UNIT IF WEAR INDICATION DIMENSION 'D' IS LESS THAN THE LIMITS SPECIFIED BELOW.

<u>NOTE</u>: If indicator support plate is bent or distorted, straighten before taking the wear measurement. The use of a 0.010 in (0.254 mm) feeler gauge may assist the inspection.

(b) Change brakes at LHR with wear pins equal to or less than 0.010 in (0.254 mm), except that brakes dispatched from LHR <u>must</u> have sufficient wear for all planned sectors (plus one sector to allow for a diversion or RTO) back to LHR, allow 0.002 in (0.051 mm) per landing.

(c) Line station limitations are:

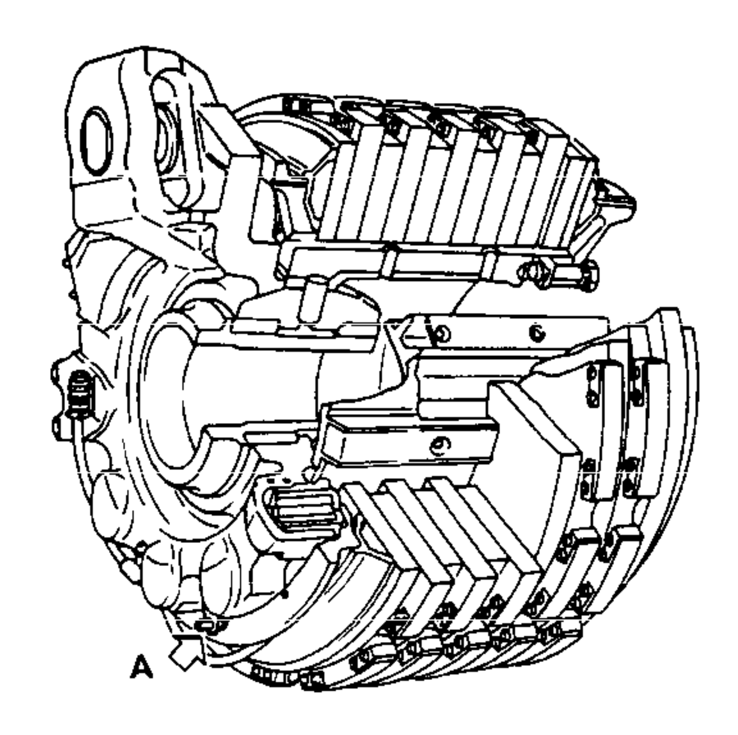
- May dispatch a brake back to main base with wear pin equal to zero.

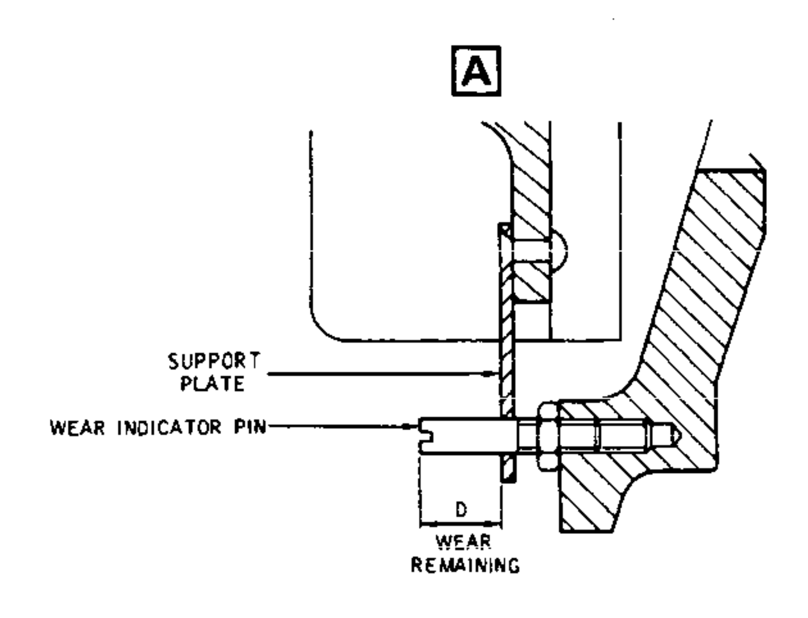
- May apply to LHR for a concession for a wear pin equal to zero to minus 0.006 in (0.152 mm).

- Change or lock out (Ref. Note below) a brake unit for a wear pin worn past the minus 0.006 in (0.152 mm) limit.

<u>NOTE</u>: If brake worn to below the above limitations or leaking, one brake may be locked out by removing and blanking both hydraulic hoses, refer to MEL 01-32-04, note that a performance penalty applies.

(3) On centre console, place brake selector lever in NORM position.





Wear Indicator
Figure 601

(4) Pressurize Green hydraulic systems (Ref. 29-11-00, Servicing).

(5) Depress and hold Captain's pedals several moments.

(6) Release pedals.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) Make certain that there is no trace of hydraulic fluid at brake cylinders.

(9) Make certain that there is no trace of hydraulic fluid at line and brake manifold unions.

(10) Check hydraulic lines, unions and attaching hardware for correct condition, and check brakes for correct operation.

(11) Check brake temperature sensor and associated attaching hardware for correct condition.

B (12) Check for loose wear indicator plates. Drill out and replace any loose rivets with Bolts A104-2B, washers SP 127B and nuts NAS 679-606W, if possible install bolts heads towards heat pack.
After replacing rivets check indicator pin is set correctly (Ref. Main Gear Brake Unit - Servicing para. 2.C.).

B (13) If the parking brake has been applied whilst the aircraft is moving, or brake pressure has been allowed to exceed 80 bar or 1160 psi, then the heat sinks at all main wheel positions should be removed for visual examination. Examine the heat sink components for cracks. If uncracked they may be refitted. If any disc is cracked, replace the entire heat sink. When inspecting the double stator, particularly look for cracks emanating from the corners of the tenon slots or from the disc edge between tenon slots.

B (14) At each main landing gear wheel removal the following mandatory check must be carried out.

RB (a) Jack bogie (Ref. 12-37-00) to lift subject main landing gear wheel clear of the ground.

(b) With the brakes released and before removing wheel from axle check that wheel rotates freely.

(c) Apply brakes, remove wheel, (Ref. 12-37-00), and inspect the visible part of the structural carbon heat sink for cracking or part fracture.

NOTE 1: If cracking has occurred it is most likely to be seen as a thin ragged line, (initial failure), or lines, in the disc edge running in a direction approximately 90° to the disc wear face - rotor and stator.

NOTE 2: Cracking may also be seen in the vicinity of the rotor drive clips.

NOTE 3: Part fracture will occur when multiple cracking per Notes 1 & 2 has reached an advanced stage and may also result in wear due to centrifugal throw out of the carbon disc pieces into the wheel.

(d) If defects are found to the heat sink, replace the brake unit (Ref. Removal/ Installation), or isolate the brake unit, (Ref. 32-42-00, Servicing), in accordance with Concorde Flying Manual Vol. II part (a).

(e) If no defects are found install wheel, (Ref. 12-37-00).

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NOSE GEAR BRAKE UNIT - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT TRAVEL RANGES OF CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A single brake unit is installed on RH wheel side. It permits the braking of both wheels by means of the common axle.

2. Nose Gear Brake Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Removable chocks	-
Nose and main gear wheel change jack (inflated tyres)	07-20-0001
R	
Protective housing - nose landing gear axle and brake	D930706000
Blanking plugs/caps	-
Container	-
Cleaning fluid (Ref. 20-30-00 product No. 469)	-
Lockwire dia. 0.60 mm (0.024 in) corrosion resistant steel	-

B. Prepare

(1) Chock main gear wheels.

(2) On centre console, make certain that brake selector lever is in NORM position.

(3) On First Officer's instrument panel, make certain that landing Gear Normal control lever is in NEUTRAL position.

R (4) Jack up nose gear wheels. Remove RH wheel (Ref. 12-37-00).

(5) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(6) Depressurize Green and Yellow hydraulic tanks, (Ref. 29-13-00, Servicing).

C. Remove (Ref. Fig. 401 and 402)

(1) Disconnect hydraulic supply line from the brake unit. Cap open line ends.

(2) Remove cotter pins and loosen three nuts (14).

(3) Remove cotter pins (3) and slightly loosen pressure screw (2).

(4) Cut and remove lockwire and remove two screws (6), at the same time holding brake unit in place, and remove stop (7).

NOTE: When removing two screws (6) cylinder unit (4) must be kept in its bore. Should it be ejected damage may occur to screw recesses.

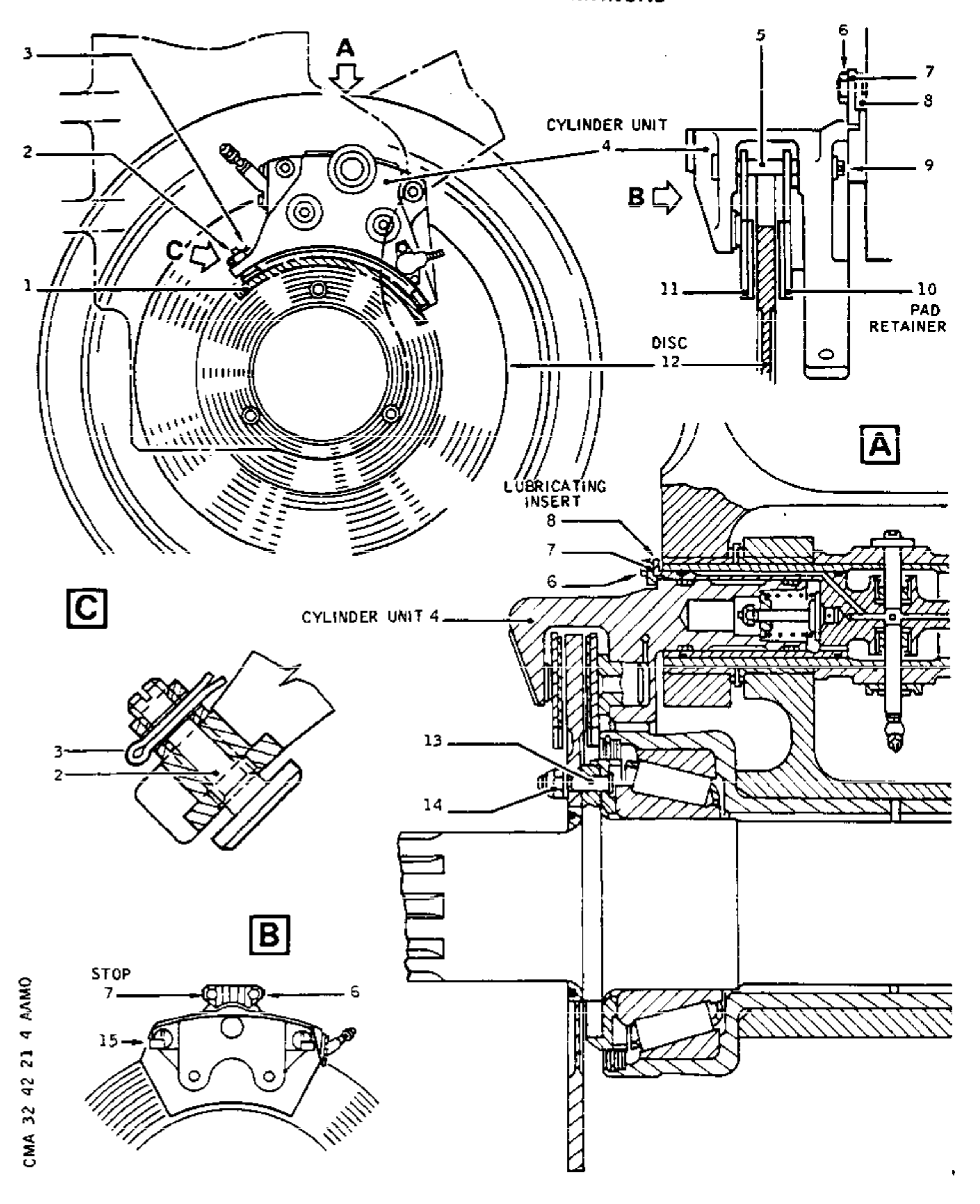
(5) Remove brake unit, separate disc (12) from cylinder unit (4).

(6) Install protective housing D930706000.

D. Preparation of Replacement Component

(1) Make certain that sintered material on pad retainers (10) and (11) is perfectly clean. If necessary clean with product No. 469.

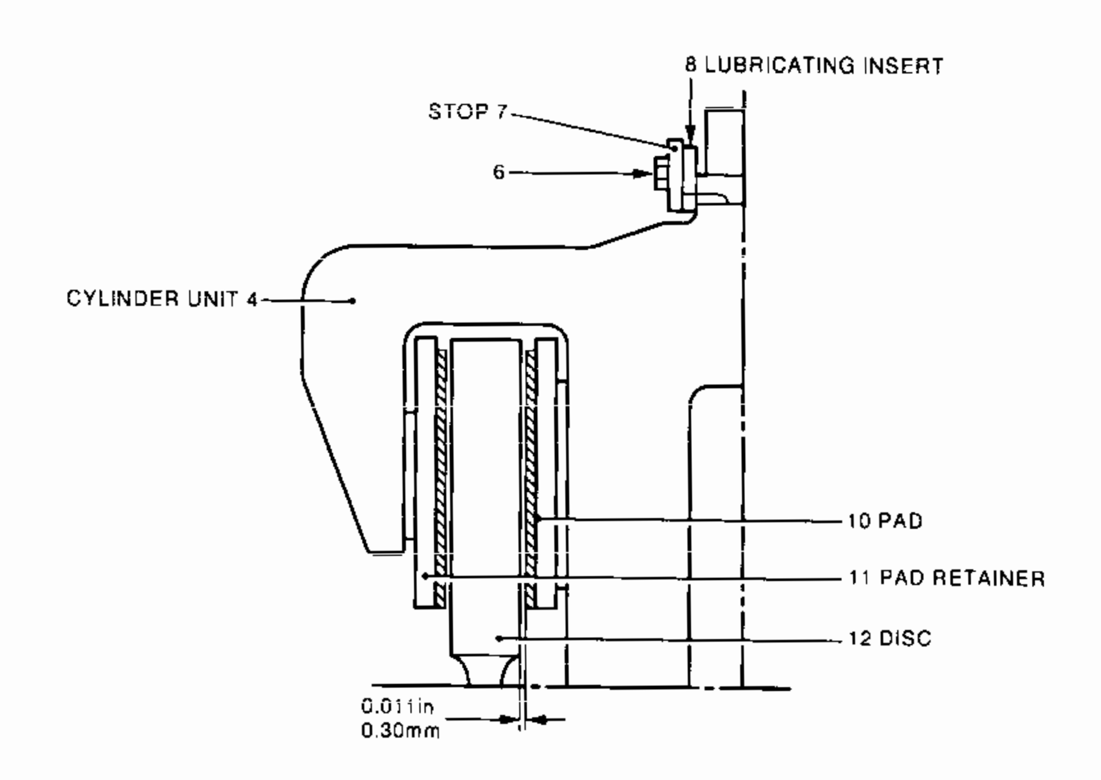
(2) The replacement brake unit is filled with product No. 011 (Ref. 20-30-00).



Nose Gear Brake Unit
Figure 401

R

E. Install (Ref. Fig. 401 and 402)



Nose Gear Brake Unit - Adjustment
Figure 402

(1) Remove protective housing D930706000.

(2) Position replacement brake unit on disc (12). Place the cylindrical part of cylinder unit (4) into the bore of torque link lower hinge point. Engage disc (12) on screws (13).

NOTE: Make certain that disc is correctly positioned (bosses on wheel side).

(3) Push the disc (12) home, then screw on and tighten nuts (14). Install cotter pins.

R (4) Insert cylinder unit (4) into the bore of the wheel
R assembly and fully tighten bolts (6). Gradually
R release both bolts (6) until an 0.011 in (0.30 mm)
R feeler gauge can be inserted between the disc (12)
R and pad (10). Measure and record the resulting gap
R between the stop (7) and lubricating insert (8).
R Remove stop (7) and remove from the abutting face
R the same amount of material as recorded above.

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(5) Install stop (7) and secure with two screws (6). Make certain that the clearance between sintered material on pad (11) and the corresponding face of the disk (12) is 0.30 ± 0.10 mm (0.011 ± 0.003 in). Wirelock the two screws together.

(6) Tighten screw (2) until it reaches bearing seat (1) surface. Install cotter pin.

(7) Remove blanking caps from brake unit port and hydraulic line. Connect supply line to brake unit.

F. Test

Not applicable.

G. Close-Up

(1) Pressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(2) Bleed the brake (Ref. 32-46-00, Servicing).

(3) Remove container.

(4) Install wheel (Ref. 12-37-00).

R (5) Lower nose gear wheels to the ground.

(6) Replenish Green and Yellow hydraulic tanks if necessary (Ref. 12-12-29).

R

3. Pad Retainers

A. Equipment and Materials

DESCRIPTION	PART NO.
Removable chocks	-
Nose and main gear wheel change jack (inflated tyres)	07-20-0001
Cleaning Fluid (Ref. 20-30-00, No. 469)	-

R

B. Prepare

(1) Chock main gear wheels.

(2) On centre console, make certain that brake selector lever is in NORM position.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in Neutral position.

R (4) Jack up nose gear wheels. Remove RH wheel (Ref. 12-37-00).

(5) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

C. Remove (Ref. Fig. 403)

(1) Straighten out both lock plates (15).

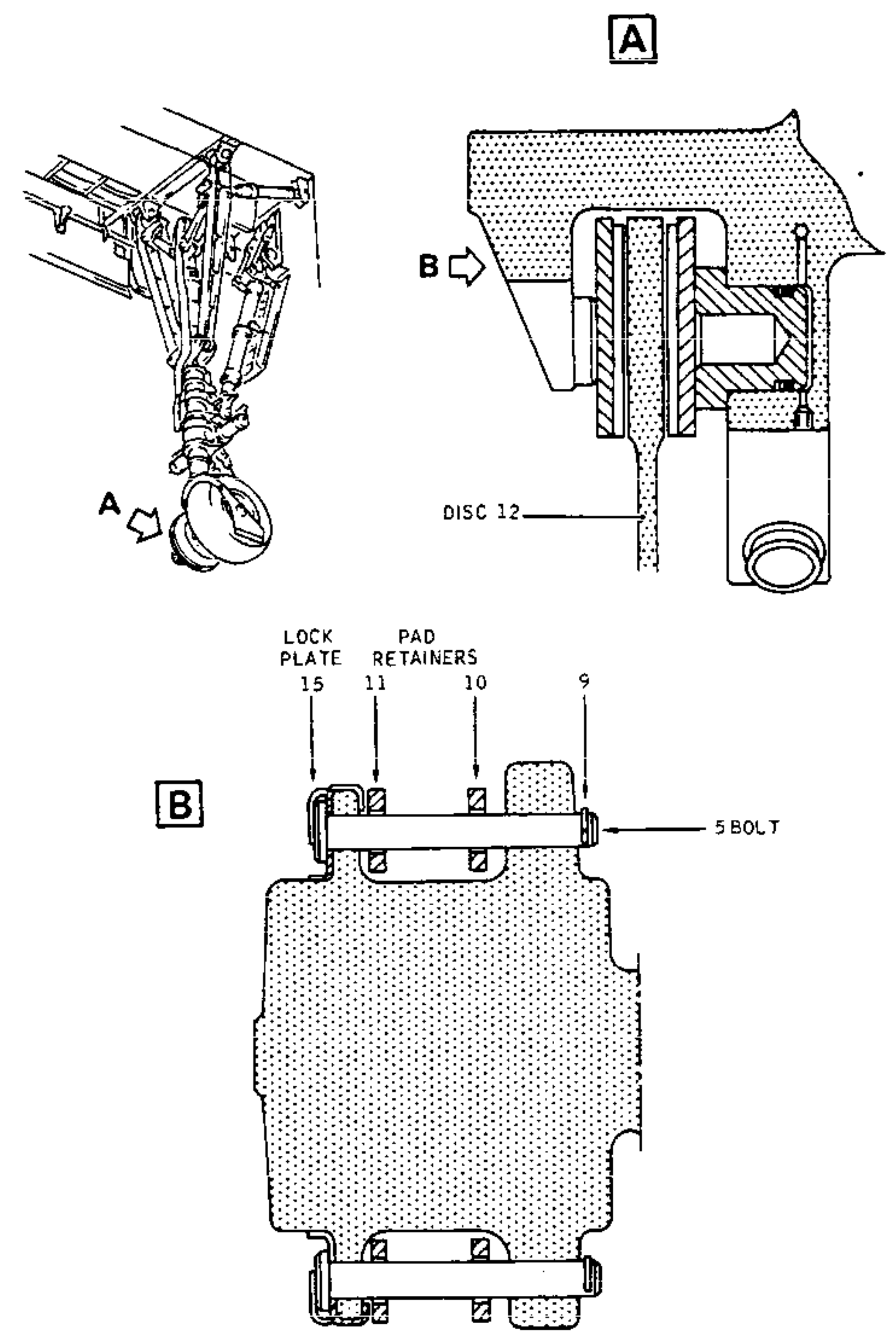
(2) Remove both cotter pins (9).

(3) Hold pad retainers (11) and (10) and remove the two bolts (5). Discard the lock plates.

(4) Remove the two pad retainers (11) and (10).

(5) Clean disc (12) with product No. 469.

D. Preparation of Replacement Component



R Pad Retainer Attachment
Figure 403

E. Install (Ref. Fig. 403)

(1) Position replacement pad retainers and insert bolts (5) fitted with new lock plates (15).

(2) Install cotter pins (9).

(3) Bend back lock plates (15) against cylinder unit and over bolt (5) head.

F. Test

Not applicable

G. Close-Up

R (1) Install wheel (Ref. 12-37-00).

R (2) Lower nose gear wheels to the ground.

NOSE GEAR BRAKE UNIT - INSPECTION/CHECK

WARNING: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Check brake unit and retainer pad for correct condition.

2. Nose Gear Brake Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Set of Feeler Gauges	-
Nose and Main Gear Wheel Change Jack (Inflated Tyres)	07-20-0001
R Cleaning Material (Ref. 20-30-00, No.469)	

B. Prepare

(1) Chock main gear wheels.

(2) On centre console, make certain that brake control lever is in NORM position.

(3) On First officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) Jack nose gear wheels clear of ground using jack
R 07-20-0001. Remove RH wheel (Ref. 12-37-00).

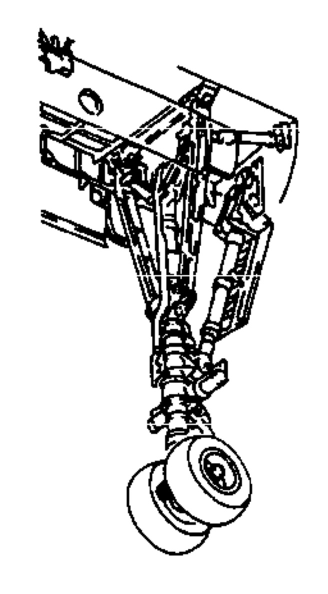
(5) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

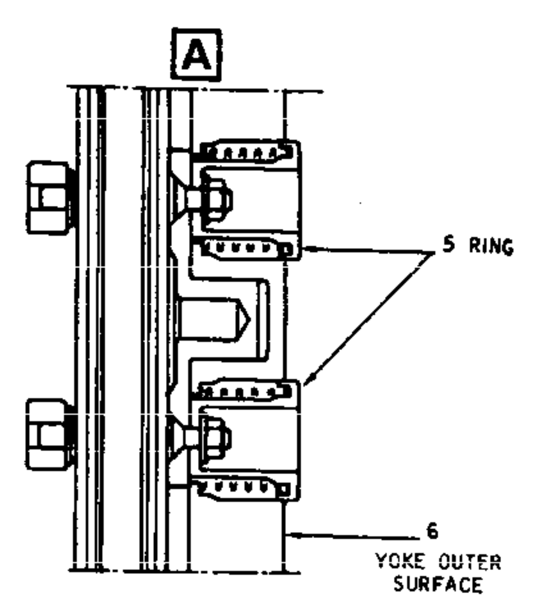
C. Check (Ref. Fig. 601)

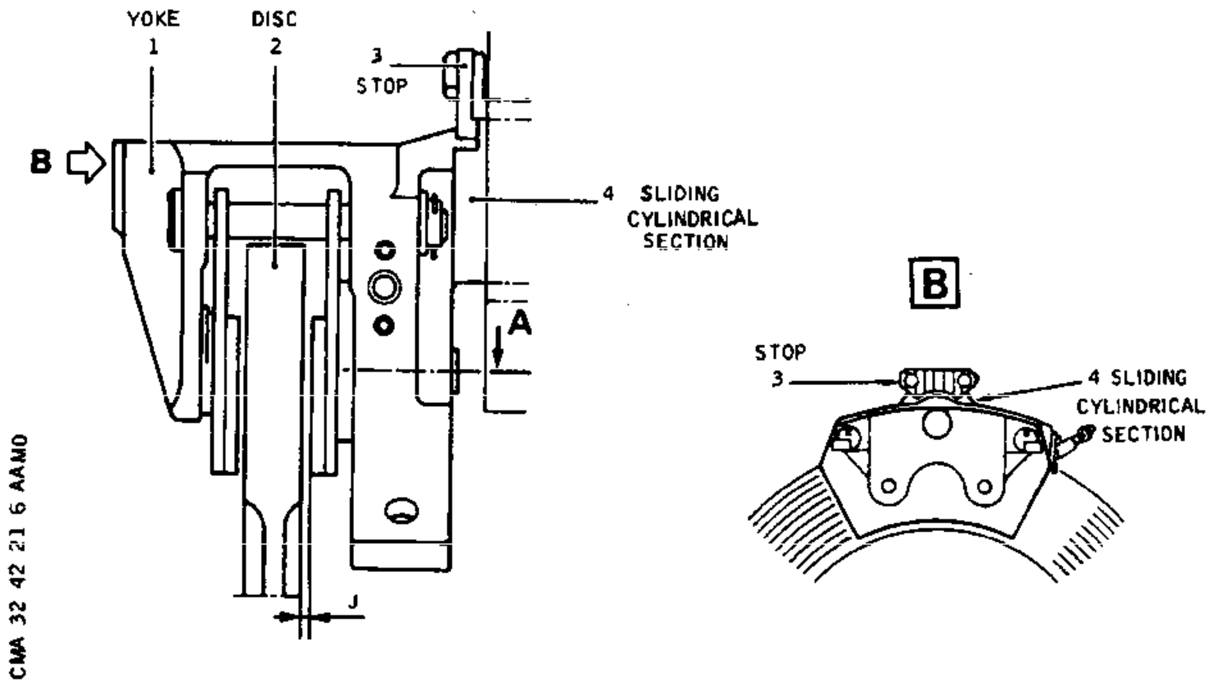
(1) Check that retainer pads are not in permanent contact with discs (2) when brake is released.

(a) The sliding cylindrical section (4) of the yoke (1) must rest against the stop (3).

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R

Brake Unit and Retainer Pad
Figure 601

(b) The two rings (5) containing return springs must be clear of the outer surface (6) of the yoke (1).

(2) Check amount of play (J) between disc and retainer pads.

(a) Minimum play, corresponding to retainer pads in new condition, is 0.30 ± 0.10 mm (0.011 ± 0.003 in).

(b) Check that brake lining thickness on each retainer pad is not less than 0.10 mm (.003 in).

(3) Examine the surface of the disc (for score marks, incipient cracks). Minimum thickness 6.5 mm (0.255 in).

(4) Clean disc, using Product No. 469.

(5) Examine hydraulic line union and bleed valve screw, and make certain that there is no leakage of hydraulic fluid.

D. Close-Up

(1) Install wheel (Ref. 12-37-00).

R (2) Lower nose gear wheels and remove jacking equipment.

END OF THIS SECTION

NEXT

NORMAL BRAKING - DESCRIPTION AND OPERATION

R 1. General
R (Ref. Fig. 001, 002, 003 and 004)

A. Normal braking is achieved by eight carbon brake units, one installed on each of the main landing gear wheels. Braking is electrically controlled and features a system of automatic electronic modulation.

The pedals mechanically actuate the pedal position transmitter (G191) and the two Emergency braking master cylinders (3680, 3681). The pedals are returned to neutral position by a spring in each master cylinder which also serves to provide an opposing load proportional to the braking applied.

Maximum Normal braking (pressure at brakes 217 bar (3147 psi)) is applied for a pedal travel of 12° approx. (second load threshold).

The pedal position transmitter is permanently energized. When the pedals are in the released position the transmitter sends a zero braking signal (maximum current 10 mA) to the servo-valves.

As soon as a pedal (Captain's or First Officer's) is depressed, the closing of the microswitches (duplicated for safety reasons) energizes the Normal braking supply selector valve (G137).

Hydraulic pressure is then available at the eight servo-valves.

The braking control current at the four LH servo-valves (G196 to G199), the four RH servo-valves (G204 to G207) or all eight servo-valves (according to the pedal(s) depressed) decreases as the pedals are depressed resulting in an increase in pressure at the brakes.

R

B. The Normal braking system is supplied by the Green hydraulic system via the Normal braking supply selector valve (G137).

One part of the system is doubled to maintain the availability of Normal braking in a main landing gear bay if damage were to affect the hydraulic system. Safety valves and non-return valves shut off each hydraulic line in the event of a hydraulic line rupture. If the pressure in the Green hydraulic system drops below 170 bar (2466 psi) approx., the Normal braking supply selector valve automatically supplies the Normal braking system with

with Yellow hydraulic system pressure. With Yellow hydraulic system pressurized, Yellow pressure is permanently available at the Normal braking supply selector valve as long as the fluid level in the Yellow tank remains normal. A drop in the fluid level in the Yellow hydraulic tank causes the first warning level microswitch (Ref. 29-32-00, Description and Operation) to close relay (G143) which in turn closes the electrovalve (G145) which shuts off Yellow pressure to the Normal braking supply selector valve. A check valve located upstream of the electrovalve return prevents loss of the Yellow system.

With pedals depressed, if pressure in the Normal braking system falls below 140 bar (2030 psi) a red BRAKES FAIL warning light on the centre instrument panel illuminates.

C. The braking torque at each brake unit is subject to a reference torque which is a function of pedal travel. This is achieved by the brakes overload control unit (G218) which modulates the braking signal sent to the servo-valves.

D. An anti-skid control unit (G200) serves to ensure maximum braking, without skidding or locking of the wheels, by maintaining main gear wheel rotational speed at a value compatible with maximum grip. The advanced anti-skid system modulates the braking of each main gear wheel independently by sending a brake release signal to the servo-valve concerned.

E. A brake ANTI-SKID TEST indicator (G190), on First Officer's instrument panel, serves to monitor operation of the anti-skid system and indicate faults in the braking system.

F. A BRAKES TEMP indicator (G341), on Flight Engineer's panel, serves to monitor the temperature of each brake unit.

Eight red warning lights (one for each main gear wheel) warn flight crew of brake overheat (temperature of corresponding wheel above 220°C) during landing gear retraction.

R

G. A red WHEELS light on First Officer's instrument panel illuminates to warn flight crew of brake overheat (temperature above 220°C).

This light also illuminates in the event of a flat or burst tyre.

R

2. Description

The Normal braking system includes the following components:

R

A. Normal Braking Supply Selector Valve (G137) Unit

The Normal braking supply selector valve supplies the Normal braking system with Green hydraulic pressure. The Normal braking system is automatically supplied with Yellow pressure in the event of a drop in Green system pressure.

B. Servo-Valves (G196, G197, G198, G199, G204, G205, G206, G207)

Each pressure dependent servo-valve includes two coils:
- one energized through the brake pedal position transmitter control signal (braking input) via the brakes overload control unit,
- the other through the anti-skid unit (brake release signal).

The current applied to these two coils modulates the pressure supplied to the brake unit through the servo-valve.

C. Safety Valves (4198, 4200, 4222, 4224, 4199, 4201, 4223, 4225)

A safety valve is installed under the bogie beam in the Normal braking supply line of each brake unit. In the event of leakage downstream of the safety valve, the valve isolates the brake unit concerned.

D. Brake Pedal Position Transmitter (G191)

The pedal position transmitter electrically controls opening and closing of the braking supply selector valve until electrovalve and transmits the braking input signal to the control coil of each of the eight servo-valves.

E. SPAD Anti-Skid Control Unit (G200)

The anti-skid control unit applies a skid (braking release) signal to the anti-skid coil on each of the eight servo-valves according to the skidding tendency of the wheels so as to obtain optimum braking without uncontrolled skidding or locking of the wheels.

F. Main Gear Tachometer Generators (G192, G193, G194, G195, G208, G209, G210, G211)

A tachometer generator connected to each of the main gear wheels serves to determine the speed of each wheel.

G. Nose Gear Tachometer Generators (G202, G203)

A tachometer generator connected to each of the two nose gear wheels (unbraked wheels) enables aircraft ground roll speed to be determined.

H. Brakes Overload Control Unit (G218)

The brakes overload control unit serves to control braking torque with respect to a reference torque which is a function of brake pedal travel.

I. Strain Sensors (G219 to G226)

Each brake torque arm is fitted with two identical strain sensors (one back-up strain sensor on each brake torque arm). The strain sensors serve to measure the torque at each brake unit.

J. A BRAKES OVERLOAD magnetic indicator (G227)

This magnetic indicator, located on Flight Engineer's panel (12-214), serves to indicate excessive braking torque at one or more brake units.

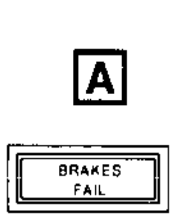
K. Brake ANTI-SKID TEST indicator (G190)

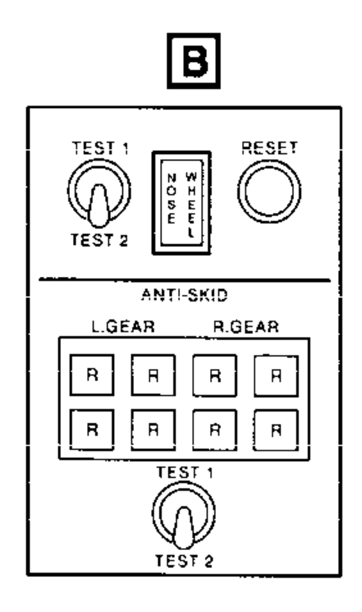
The brake ANTI-SKID TEST indicator, through the illumination of white R (release) letters on a black background, serves for checking:

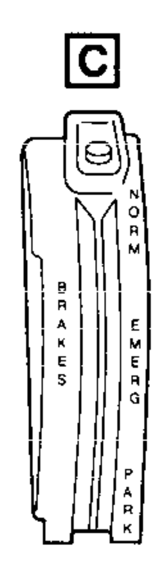
(1) Prior to take-off, correct operation of brake anti-skid system and in particular the circuits of the two tachometer generators driven by the nose gear wheels.

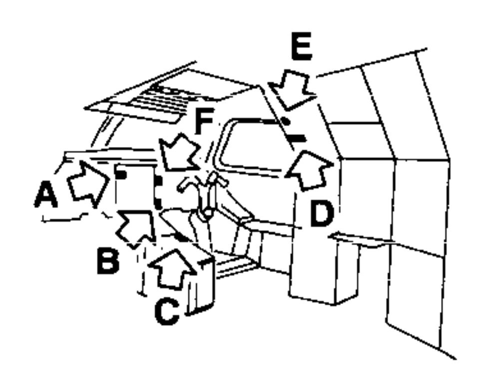
(2) Prior to landing, that all the regulators in the control unit deliver a braking de-activation control signal.

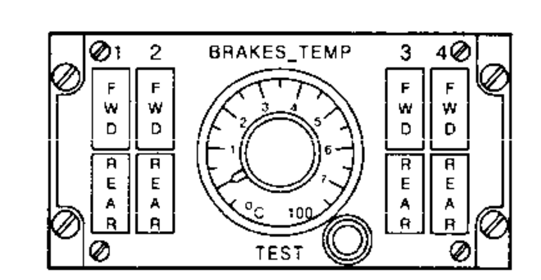
(3) Throughout braking, correct operation of brake anti-skid control unit.



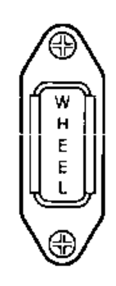








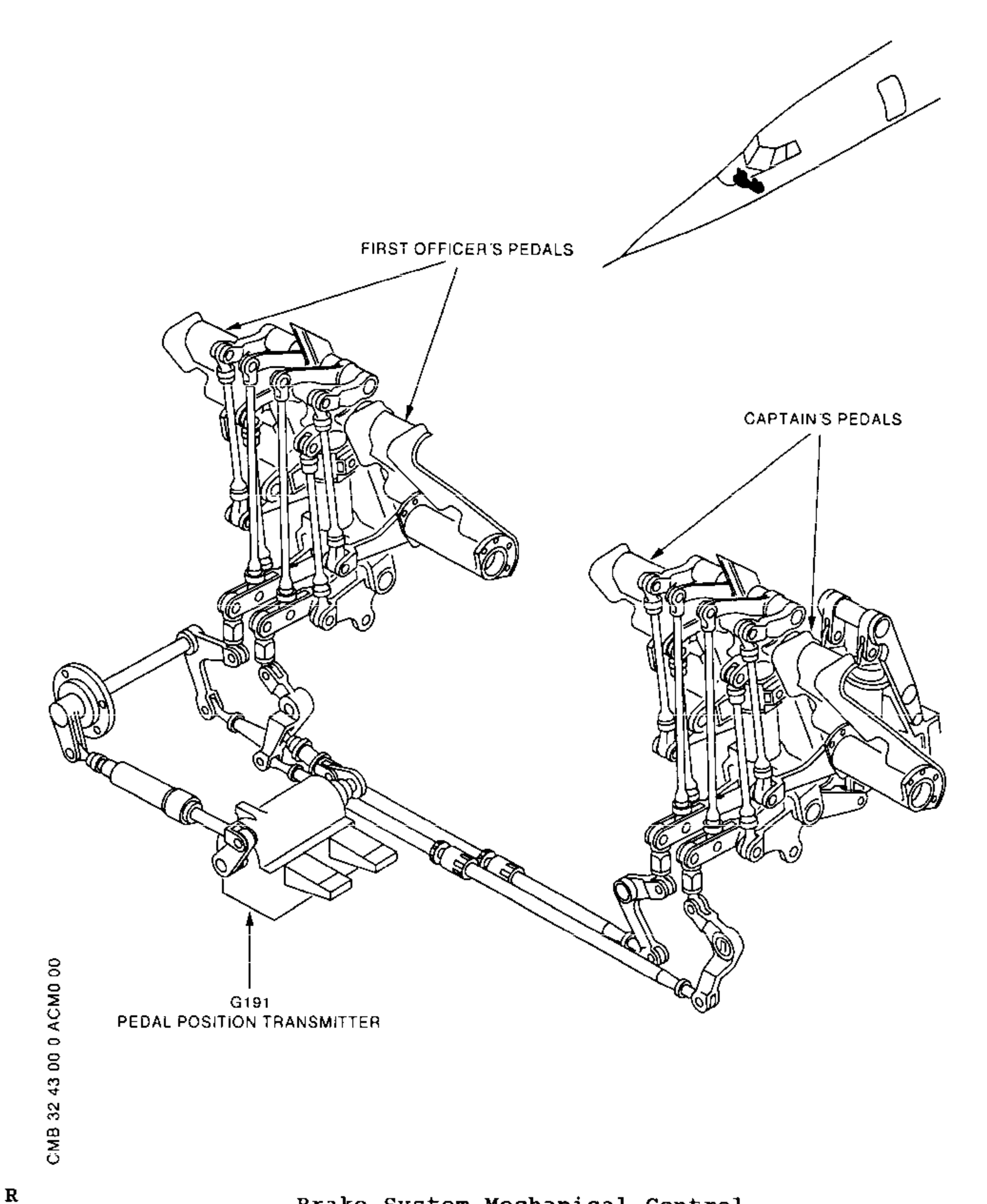




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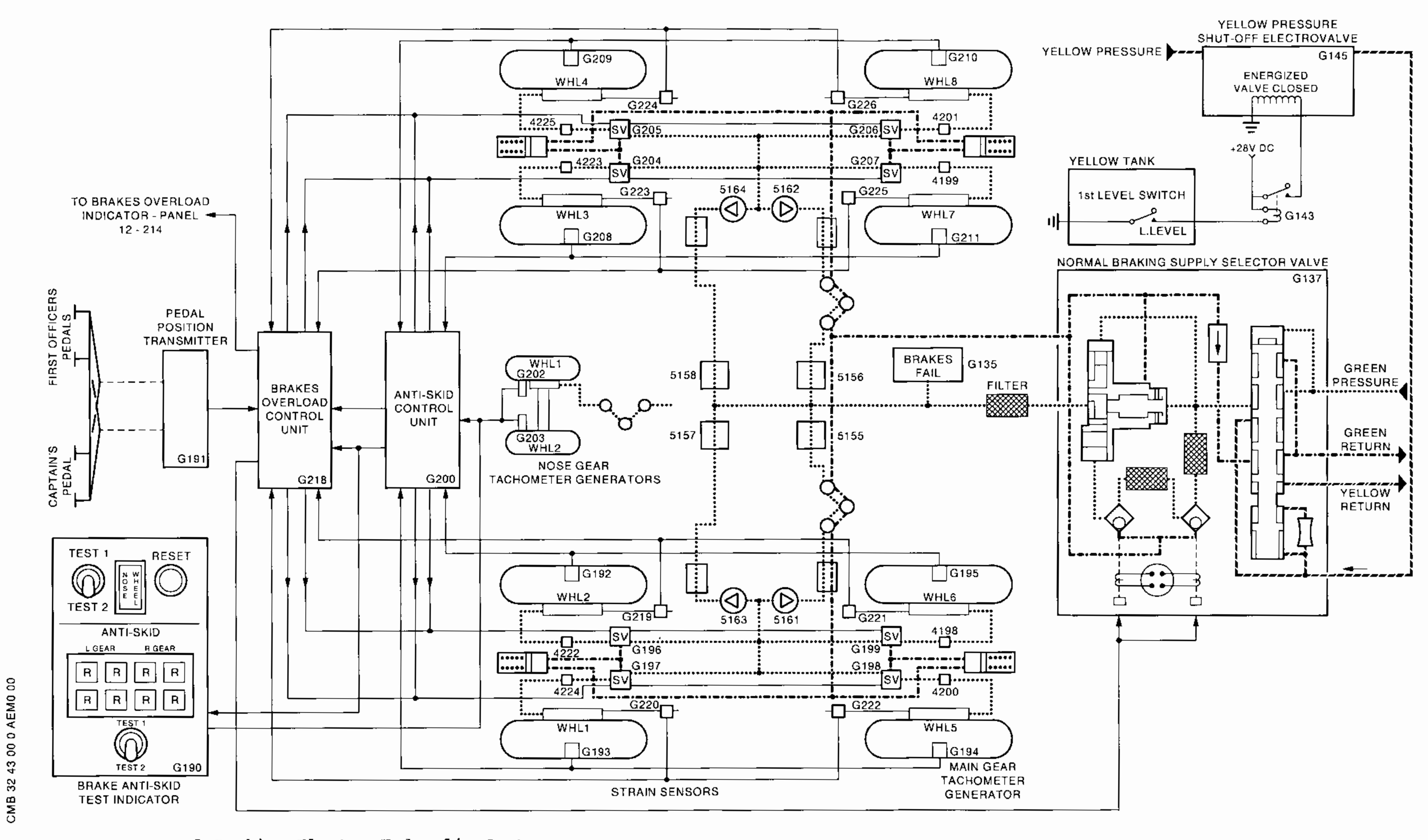
R Controls and Indicating
Figure 001



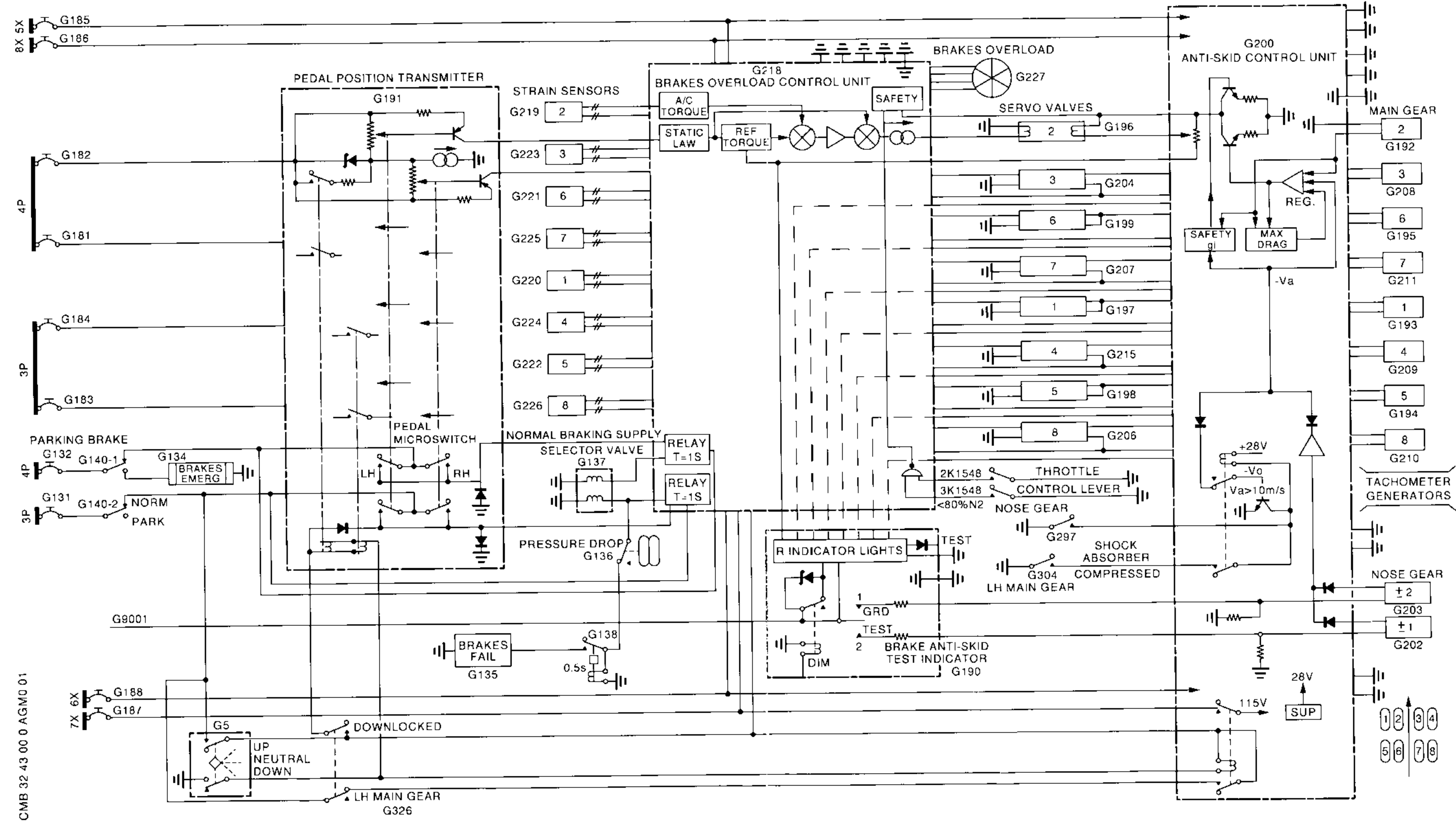
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R

Brake System Mechanical Control
Figure 002



R Normal Braking Electro-Hydraulic System
Figure 003



R Normal Braking Electrical Circuit
Figure 004

L. Red BRAKES FAIL warning light (G135)

This warning light indicates a drop in hydraulic pressure during braking.

M. Brakes Temperature Indicator (G341)

The BRAKES TEMP indicator provides for the eight brakes:

(1) Illumination of the red light corresponding to the overheated brake unit.

(2) Permanent display of the temperature of the hottest brake unit.

(3) Temperature measurement of each of the eight brake units.

(4) Checking of the channel for correct operation by pressing a TEST pushbutton.

N. Wheel Overheat Indicating Amplifier (G336)

The wheel overheat indicating amplifier serves to supply the temperature sensors with constant current and to amplify the information received from the sensors. The temperature information is then sent to the BRAKES TEMP indicator (G341).

R

O. Safety valves 5155, 5156, 5157 and 5158

Associated to non-return valves 5161, 5162, 5163 and 5164 shut off a hydraulic system where a rupture occurs and serve to maintain Normal braking.

3. Valve - Normal Braking Supply Selector (G137)

A. General

The Normal braking supply selector valve unit enables the braking system to be supplied with Green or Yellow hydraulic pressure.

B. Description

The Normal braking supply selector valve unit includes:

- A spool valve (A)
- A slide valve (J) associated with actuating piston (L) and bias piston (H)
- Two ball-type pilot valves (E) and (F) each operated by a solenoid
- A check valve located in the braking system return line
- Line unions (B), (C), (D), (G), (K), (M).

C. Operation

R (1) Normal Supply (Ref. Fig. 005 and 006)

R (a) Solenoids de-energized (Ref. Fig. 005)

Green hydraulic pressure, delivered at (M), moves spool valve (A) to the right.

Pressure is simultaneously delivered to slide valve (J), slide valve actuating piston (L) and pilot valves (E) and (F).

Pressure passes through the open pilot valves (E) and (F) to slide valve bias piston (H). Because bias piston (H) has a greater effective area then actuating piston (L) the piston assembly is held in left-hand stop position.

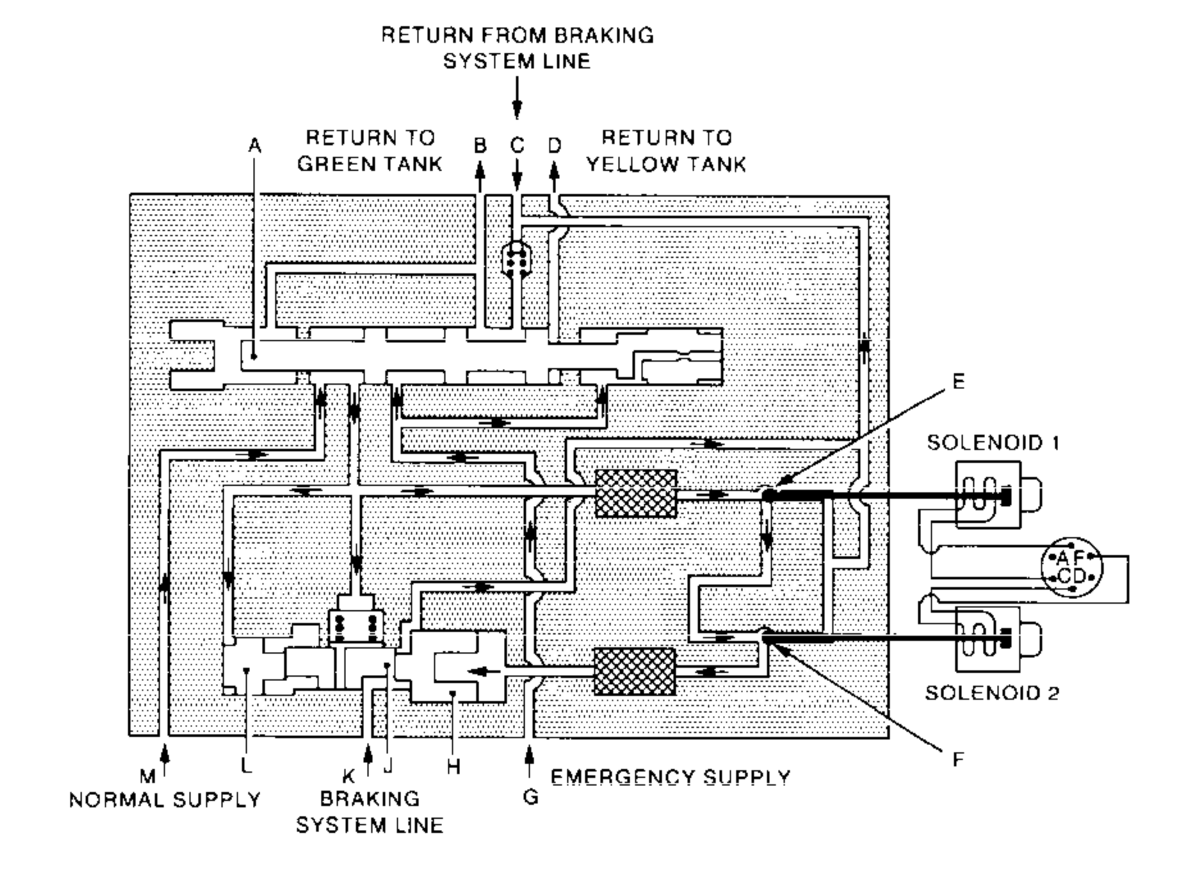
Fluid delivery to port (K) and braking system line is shut off.

Braking system lines (K) and (C) pressure is ported to Green hydraulic system return tank. Yellow hydraulic system pressure is in reserve at spool valve (A).

R (b) Solenoids energized (Ref. Fig. 006)

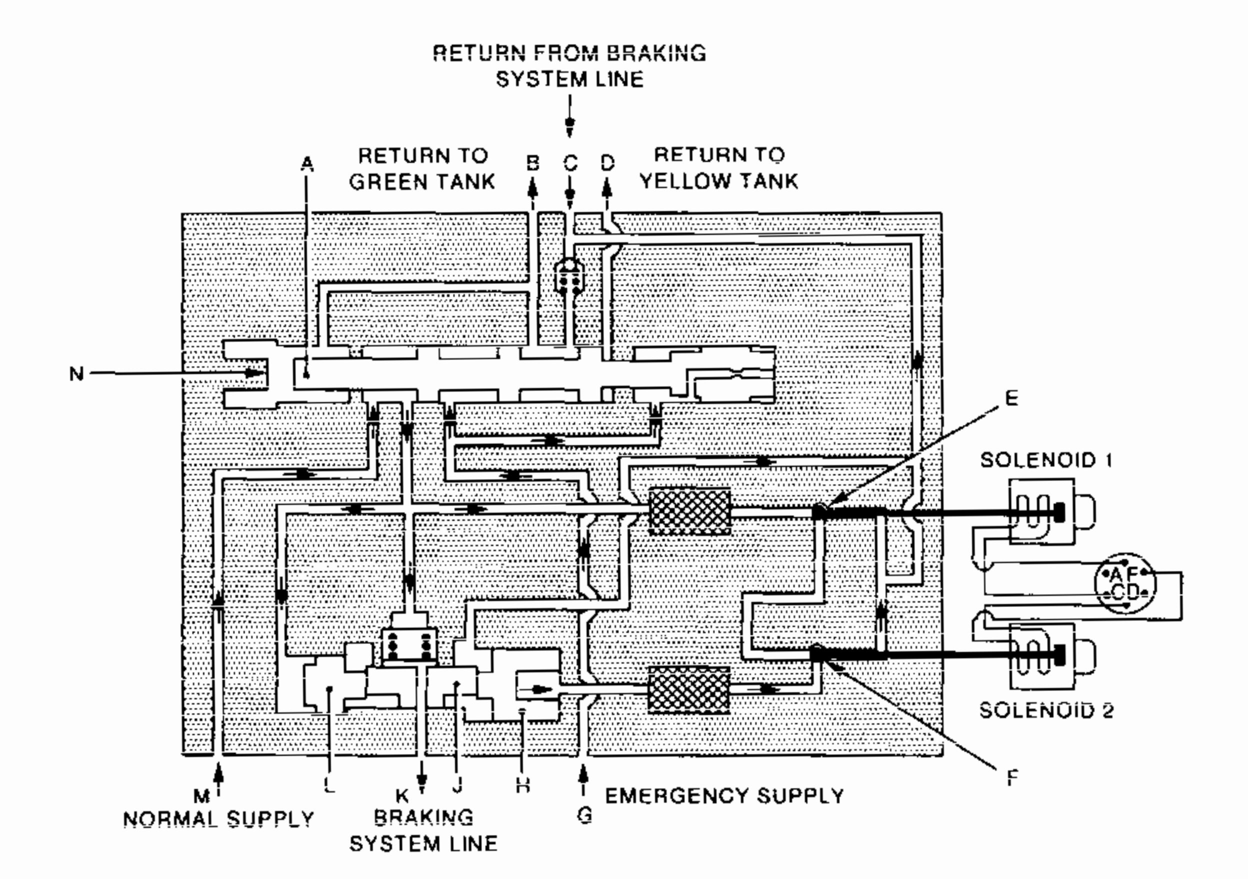
When power is applied to solenoids pilot valves (E) and (F) are closed.

Pressure is no longer delivered to bias piston (H).



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R Solenoids De-Energized
Figure 005



CMB 32 43 00 0 ALM0 00

Solenoids Energized
R Figure 006

Pressure is delivered to actuating piston (L) which moves slide valve (J) to the right. The fluid passes through slide valve (J) to supply braking system via port (K).

Braking system exhaust pressure (C) is ported to Green hydraulic system return tank (B).

(2) Emergency Supply

Normal braking supply selector valve unit Emergency operation (Green hydraulic pressure de-activated, Yellow hydraulic pressure activated) is the same as Normal operation except that spool valve (A) moves to stop position against seat (N) thus shutting off Green hydraulic system fluid and allowing Yellow hydraulic fluid to pass.

Braking system exhaust pressure (C) is ported to Yellow hydraulic system return tank (D).

NOTE: If one of the two solenoids fails the associated pilot valve remains open. The second pilot valve operates normally and Green or Yellow hydraulic system pressure is delivered to actuating piston (L). The braking system is provided with hydraulic pressure.

4. Servo-Valve (G196, G197, G198, G199, G204, G205, G206, G207)
R (Ref. Fig. 007 and 008)

A. General

The brake servo-valve is of the two-stage electro-hydraulic, pressure controlled type.

The electrical control consists of two coils (B1 & B2). One coil is connected to the pedal position transmitter via the brakes overload control unit (control coil). The intensity of the control signal is inversely proportional to pedal travel : 10 mA pedals released, no braking; 3.1 mA pedals depressed (12 degree position), maximum braking. The control signal can be modified by the intervention of the brakes overload control unit (torque law). The anti-skid coil receives a correcting signal (brake release) from the regulator installed in the servo loop of the wheel concerned.

The increase in current is proportional to brake release (maximum current, maximum brake release).

B. Operation

Coils (B1 & B2) which are electrically independent, induce a flux in magnetic metal movable core (C) which is proportional to the algebraic sum of the currents flowing through them.

A couple of the forces causes the movable core to displace between the poles of a permanent magnet in accordance with the flux density and polarity at the ends of the movable core.

When no electrical signal is present, flap (A) which is integral with core (C) is balanced between the two opposing jets of nozzles (D1 & D2) installed in line with one another.

When an electrical signal is transmitted in the form of an electrical current flowing through the control coil or both of the coils, core (C) is displaced between the permanent magnet poles thus moving flap (A).

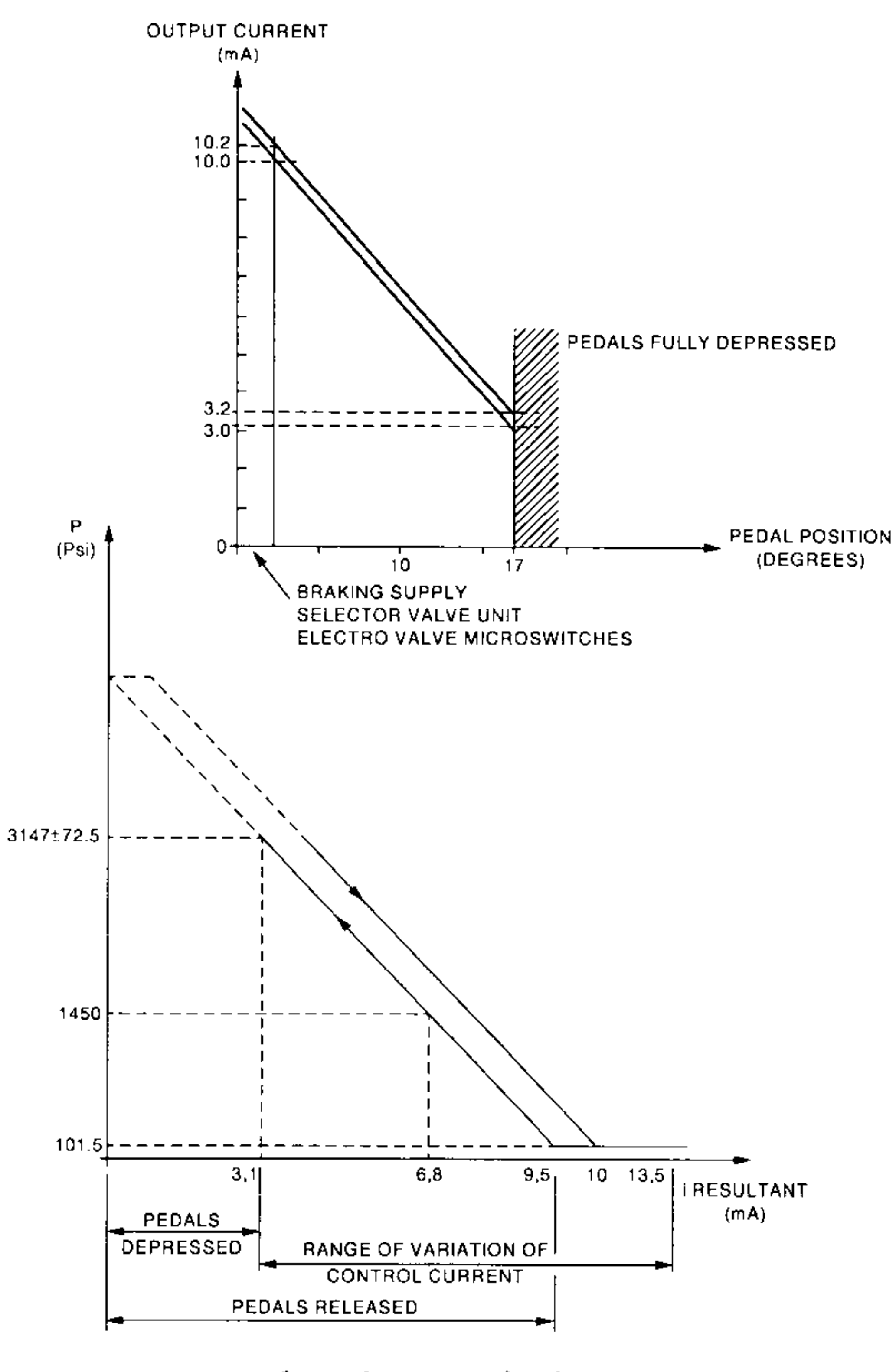
Depending on the difference in the rate-of-flow through restrictors (R), opposing pressures (P1 & P2) upstream of the nozzles vary proportionally to the amount by which the flap is displaced.

These pressures are applied to two unequal areas (S1 & S2), with (S1) being the greater, and thus move the valve spool from its neutral position.

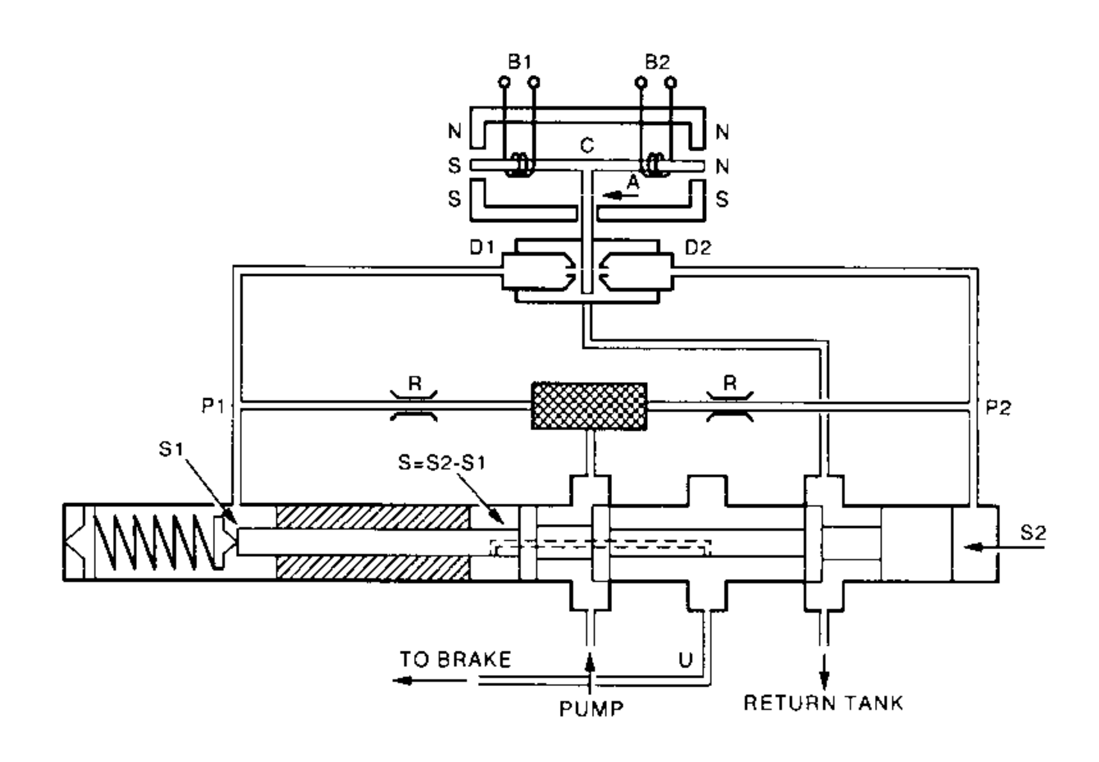
With zero current in both the coils, since the flap is centred by the flow through the two nozzles, pressures P1 and P2 are equal. When the product of P2 S2 exceeds the product of P1 S1 the valve spool is displaced so that pump pressure is ported directly to the brake system (maximum brake pressure).

On the contrary, with the sum of the currents in the coils equal to or greater than 10 mA, the position of the movable core is such that nozzle D1 is almost completely closed off and the increase in P1 with respect to P2 which diminishes is such that the product of P1 S1 becomes greater than the product of P2 S2.

The valve spool moves and the brake system is connected directly to the return tank (zero pressure at brake).



R Servo-Valve Characteristics
R Figure 007



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R Servo-Valve
Figure 008

Between the two extreme positions of the spool, pressure of outlet U applied to area S restores the balance between the unequal forces applied by pressures P1 and P2 on the end of the spool.

Therefore, the hydraulic pressure delivered to the brake gradually varies in inverse function to the sum of the currents flowing through the two coils.

5. Valve - Safety (4198, 4200, 4222, 4224, 4199, 4201, 4223, 4225)
R (Ref. Fig. 009)

A. General

The safety valve installed in the Normal braking system upstream of each brake unit serves to isolate the brake unit concerned in the event of leakage downstream of the safety valve, thus maintaining the pressure upstream.

B. Description

The safety valve includes a body with central bore. Two ports are drilled in the body:

- Inlet port A
- Outlet port B

Sealing between the safety valve and the corresponding base plate is achieved through two spools fitted with seals.

The body is fitted with:

- a piston with machined passages for the hydraulic fluid. The piston is maintained in the open position by a spring.
- a seat held in the body by a threaded plug.
- a restrictor screwed into the fluid passage interconnecting the chamber (spring side) and the inlet chamber A.
- an end-fitting screwed into the valve (spring side) and fitted with a bleed plug.

C. Operation

When there is no fluid flow the piston is held in open position by the spring.

(1) Normal flow

During normal operation the fluid passes from A towards B. The pressure of the fluid acts on the piston which tends towards the closed position. The flow being limited a back pressure acts on the piston and the spring loading is sufficient to maintain the piston in the open position.

(2) Leak downstream of safety valve.

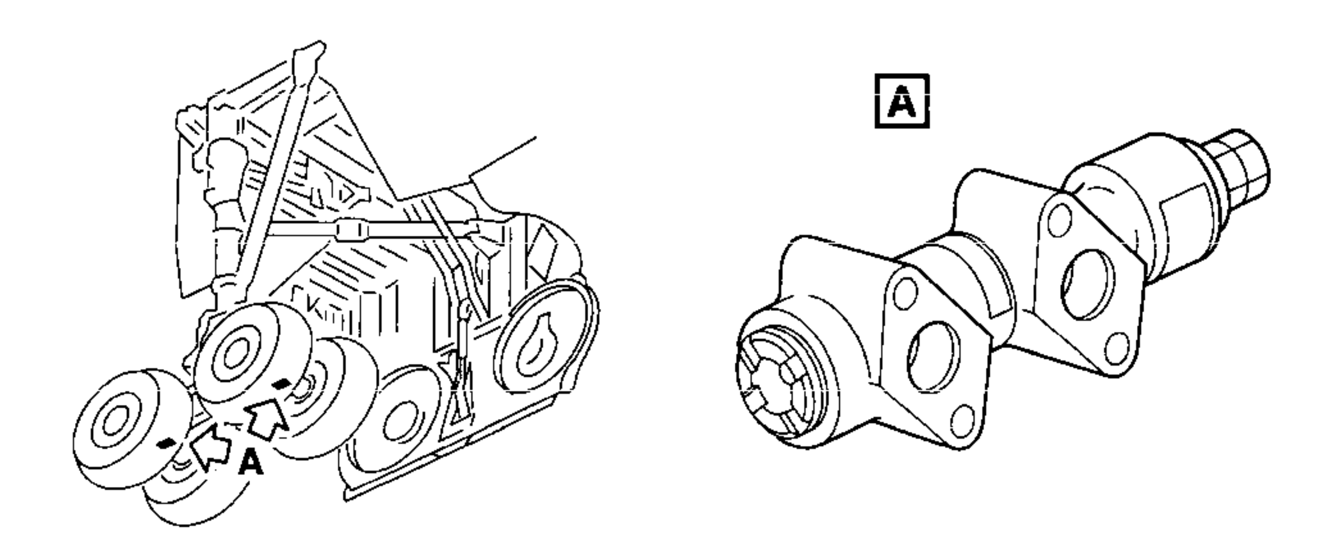
In the event of leakage downstream of the safety valve, the back pressure is reduced. The action of the spring is no longer sufficient to maintain the piston in the open position. The piston moves to the closed position. Pressure from A passes through the restrictor and maintains the piston in the closed position. B is isolated from A.

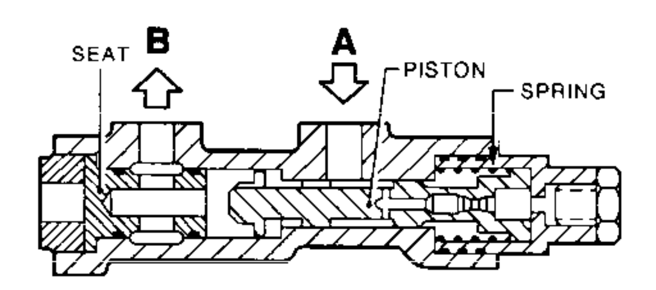
The valve closing time is inversely proportional to the flow and therefore the leak.

NOTE: The valve remains closed even if A is no longer supplied. The pressurization of the hydraulic tanks upstream of A being sufficient to maintain the piston in closed position.

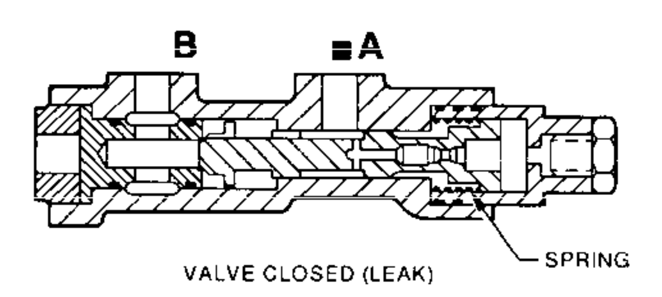
(3) Restoration of valve to normal operating condition.

Restoration of the valve to normal operating condition is achieved by removing the bleed plug and depressurizing the chamber (spring side). The action of the spring is once again sufficient to maintain the piston in open position.

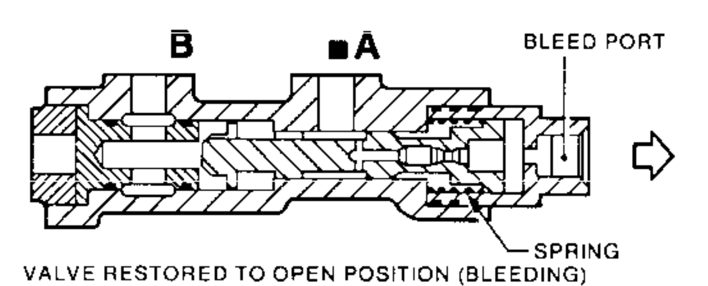




VALVE OPEN (NORMAL)



VALVE CLOSED (LEAK)



VALVE RESTORED TO OPEN POSITION (BLEEDING)

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Safety Valve
R Figure 009

6. Transmitter - Pedal Position
R (Ref. Fig. 002, 007 and 010)

A. General

The pedal position transmitter serves to:

(1) Control the braking supply selector valve unit electrovalve delivering hydraulic pressure to the servo-valves.

(2) Deliver an electric current via the brakes overload control unit to the control coil of each servo-valve which is inversely proportional to brake pedal travel while still making it possible to provide differential braking between LH and RH sides.

(3) Provide automatic braking of wheels during gear retraction.

B. Description

The transmitter consists of a single casing. The transmitter is mechanically linked to the pedals. (Ref.
R Fig. 002).

The pedal position transmitter includes:

(1) Four printed circuit boards. Each board is connected to two potentiometer assemblies, each controlled by the Captain's and First Officer's pedals.

Each board, supplied with 28 V dc from the aircraft electrical network, controls one LH and one RH wheel in order to maintain symmetrical braking in the event of supply failure.

(2) Interconnection logic of the two LH and RH pedals.

(3) In-flight wheel braking logic.

C. Operation

The pedal position transmitter is actuated by the Captain's and First Officer's pedals. The LH and RH pedals control the braking supply selector valve unit electrovalve microswitches as well as the eight potentiometers grouped off in pairs (one left and one right) on the four printed circuit boards.

Action on a Captain (or First Officer) pedal results in rotation of the corresponding control lever. The control lever shaft drives the slider of the precision potentiometers. Each potentiometer is supplied with constant voltage taken from a Zener diode supplied by a constant current generator. The voltage at the potentiometer slider controls a generator which delivers a current, proportional to the angular displacement of the control lever, to the servo-valve of each wheel.

Variable resistors serve to adjust the output current for the two extreme positions of the control lever (3 and 10 mA).

When pedals are released the braking supply selector valve unit electrovalve is closed and the current flowing through the servo-valve control coils is between 10 and 10.24 mA. At start of depression of any of the pedals, closure of the two microswitches installed in parallel (fail-safe measure) causes the electrovalve of the braking supply selector valve to be energized through two timing relays in the brakes overload control unit.

As the pedals are subsequently depressed the current delivered to the servo-valves through a transistorized circuit is reduced to a limit value of between 3 and 3.2 mA.

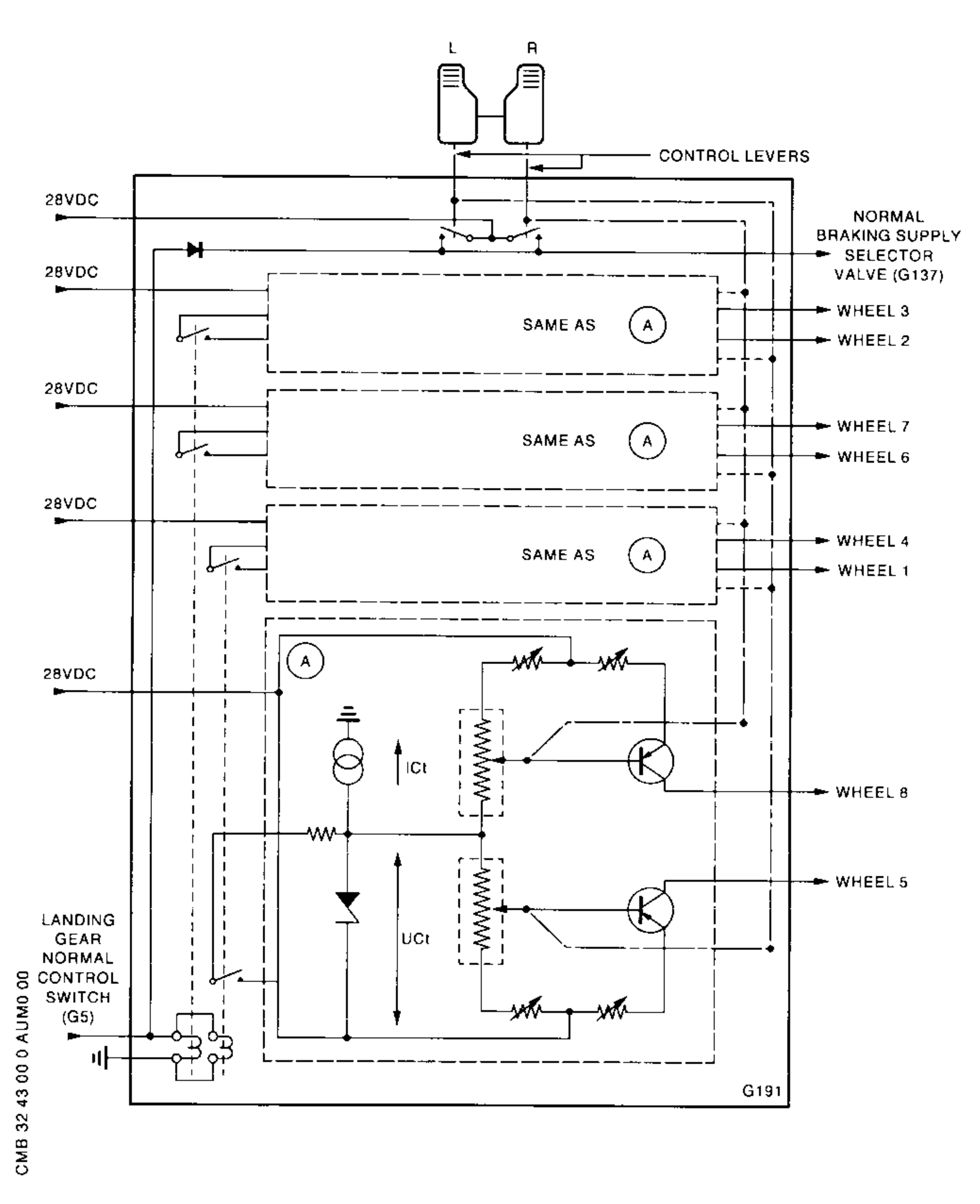
During gear retraction, the landing gear Normal control lever (switch (G5)) in UP position causes:
- the Normal braking supply selector valve (G137) electrovalve to open.
- energization of two relays which connect a resistance in parallel with the Zener diode. The value of the potentiometer supply voltage and the resulting output voltage is therefore changed. An automatic braking order is thus elaborated and transmitted to the eight servo-valves during gear retraction.

7. <u>Control Unit - Anti-Skid</u>
R (Ref. Fig. 011, 012 and 013)

A. General

Anti-skid control system components for the eight main gear wheel brakes are contained in unit (G200).

<u>NOTE</u>: Abbreviations are used in the following text. The definitions of the abbreviations used are given in Fig. 011.



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R Pedal Position Transmitter-Schematic
Figure 010

B. Description

Each of the optimized control circuits is independent and associated with a single wheel. However, the circuits corresponding to a LH and RH wheel symmetrically laid out with respect to the aircraft longitudinal centreline, have in common:

- A power supply
- Va, Vf and gi data processing.

Each circuit comprises:

(1) A regulator.

(2) A gi limit.

(3) An optimization function comprising:

(a) An F Computer.

(b) A maximum F detector.

(c) An integrator.

(d) A gBeta and gAlpha limit generator.

(e) A brake saturation detector.

C. Operation of Brake Anti-Skid Control System

The purpose of the anti-skid control system is to provide efficient braking by keeping wheel rotational speed at a value compatible with optimum grip. This method of anti-skid control serves to modulate braking during acceleration and deceleration phases.

The two main functions of the anti-skid control unit are therefore:

- modulation: maintaining wheel rotational speed at a given value Vc (Reference speed).
- optimization: computing a signal ΔV, to keep Vc (reference speed) at a value compatible with maximum drag.

(1) Operation

(a) Sensing nose gear wheel (unbraked) speed
R (aircraft speed Va), (Ref. Fig. 014).

- The nose gear wheel speed (aircraft speed Va) is sensed by the nose gear tachometer generators (duplicated as a fail safe measure). The signals (V1 and V2) from the two nose gear tachometer generators are separated by an amplifier (amplification 1) and the strongest signal is used.
- Between main and nose gear touch-down, a fixed memorized signal Vo replaces the V1 or V2 signal. The Vo signal is calibrated at a value simulating an aircraft speed greater than 100 m/sec, thus preventing braking before nose gear touch-down.
- The Vo signal disappears automatically under the action of a relay excited when:

  - the nose gear shock absorber is compressed.
  - or the nose gear tachometer generators start turning (Vc signal: operative for aircraft speeds greater than 10 m/sec.).

This relay is then self-excited via the LH main gear weight microswitch to prevent, in the event of nose gear weight microswitch failure, the Vo signal reappearing at very low aircraft speeds.

(b) Sensing of main gear wheel (braked) speed.

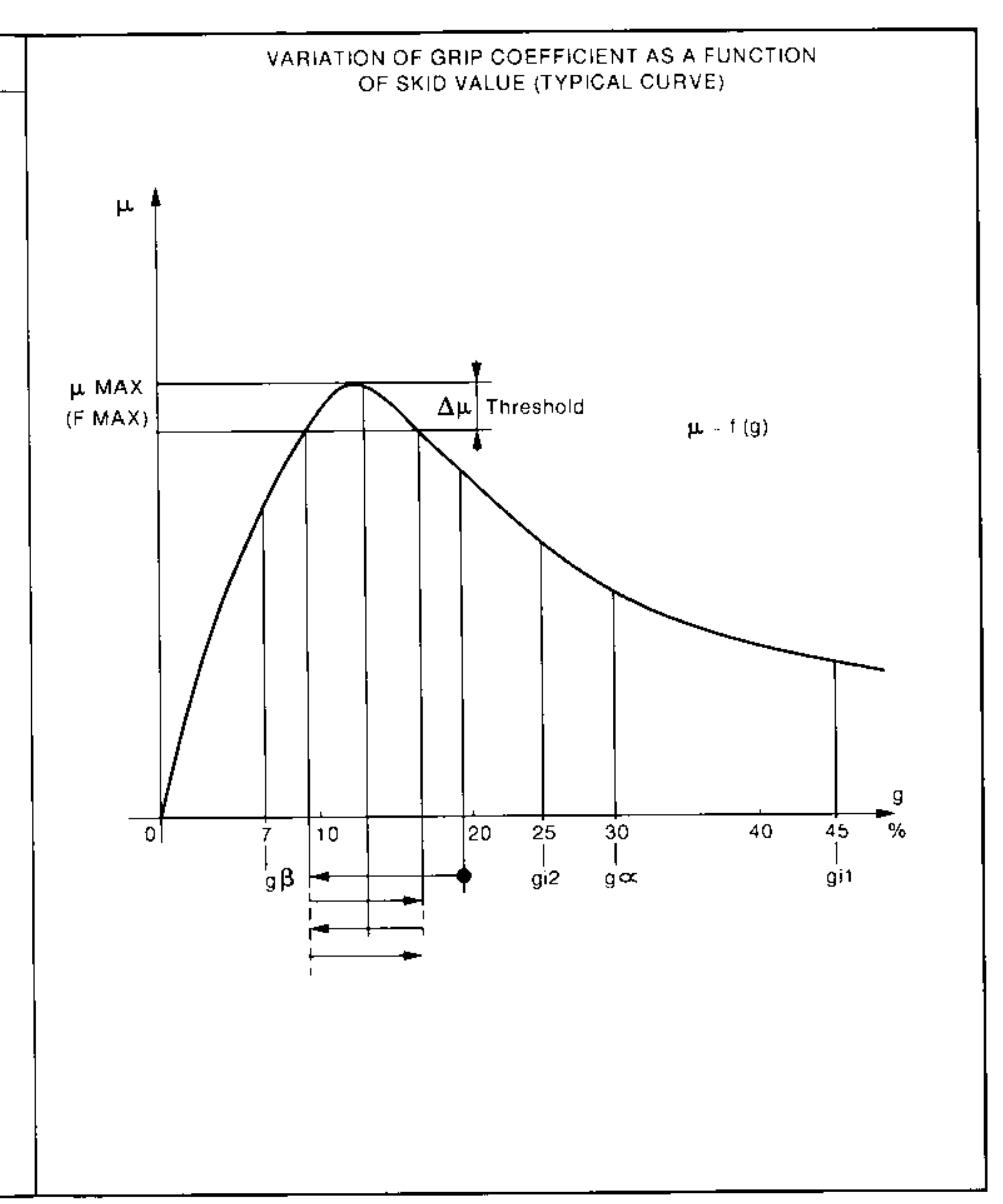
For each of the main gear wheels, a tachometer generator provides a direct current proportional to the wheel speed (Vr).

(c) Calculating skid value of a wheel.

The skid value (g) of the wheel is defined as g = 1 - Vr/Va.

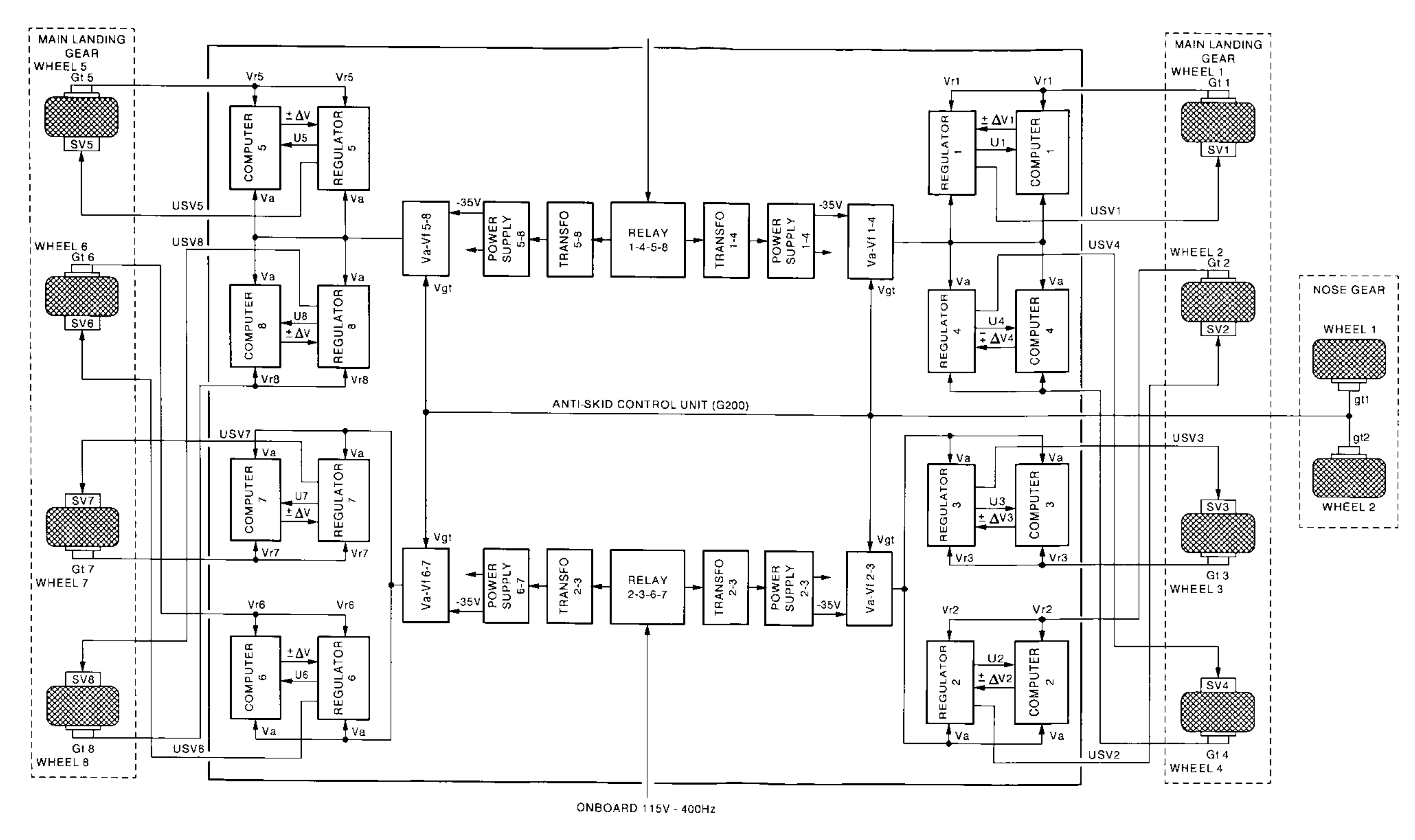
When g = 0 the wheel is not braked. (Vr = Va).
When g = 1 the wheel is locked. (Vr = 0).

SYMBOL	DEFINITION	SYMBOL	DEFINITION
Va	Aircraft speed	t	Tangential action of the ground on the wheel (drag) $F = Ff + \frac{I}{R} \cdot \frac{dV}{dt}$
Vo	Estimated aircraft speed prior to nose gear touch -down (memorized)	Ff	Braking force applied by the brake on the wheel
Vf	Low speed corresponding to Va = 10m/sec.	I	Moment of inertia of the wheel
Vr	Braked wheel speed	R	Wheel/tyre radius
Vc	Reference speed corresponding to maximum drag $Vc = KVa + \Delta V$	μ (Mu)	Grip coefficient $\mu = \frac{F}{P}$
ΔV	Variable signal ensuring search for optimum Vc about maximum drag $\Delta V = \int g' Va$	P	Vertical load on the wheel
		U	Electric signal received by the servo-valve
g'	Signal generated by the computer	gt1 & gt2	Nosewheel tachometer generators
$\frac{dV}{dt}$	Acceleration of the wheel	Gt1 to Gt8	Main gear wheel tachometer generators
g	Skid value of the wheel $g = 1 - \frac{Vr}{Va}$	ep	Biasing for braking during run-up
gi1	Safety limit above which a maximum brake release signal is transmitted		
gi2	Skid value at which braking with anti-skid modulation and search for optimum Vc is resumed		
gα (Alpha) & gβ (Beta)	Skid limit values causing inversion of ΔV signal when the curve $\mu = f(g)$ has no maximum		



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R Table of Abbreviations
Figure 011

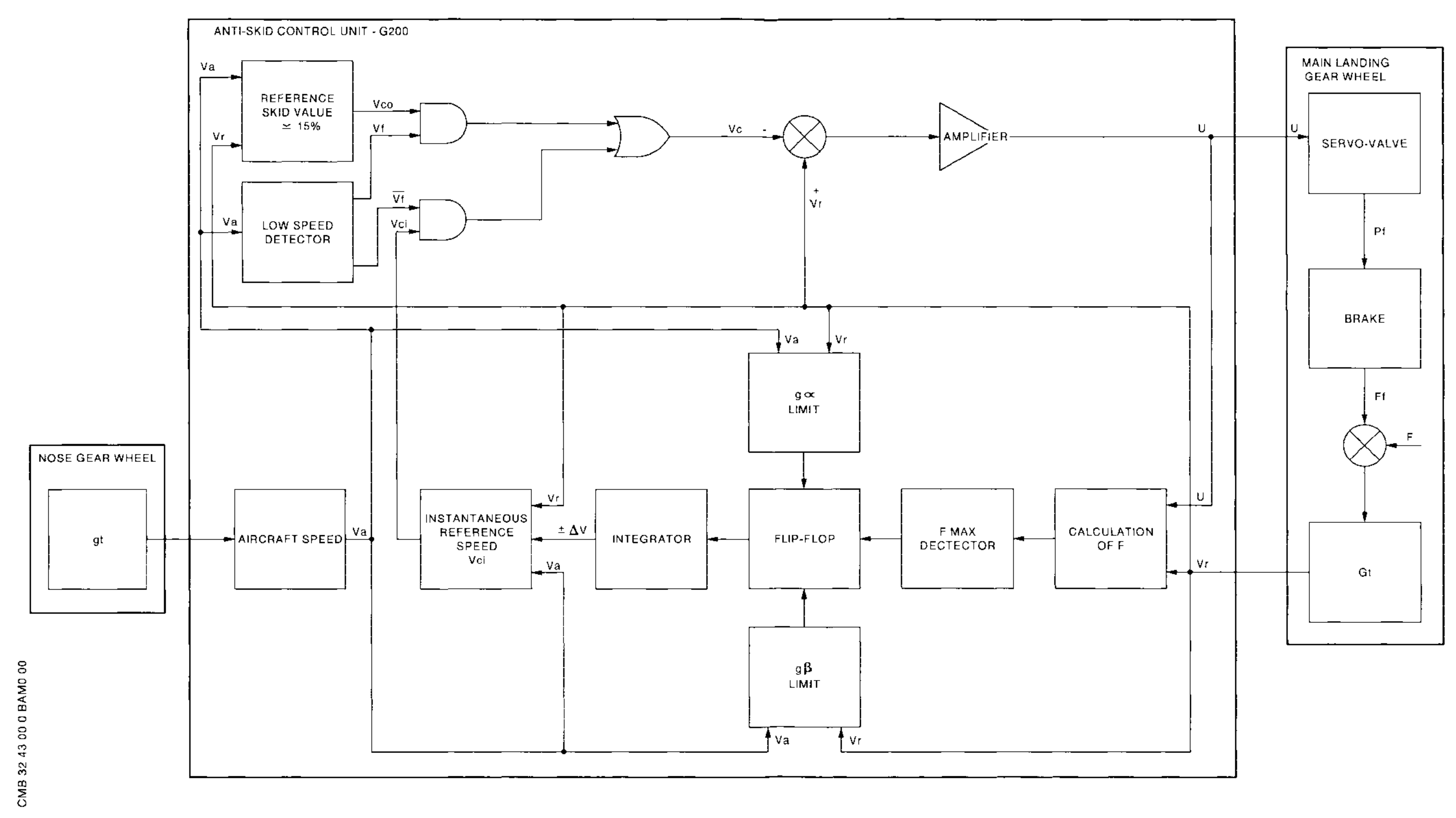


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Brake Anti-Skid Control Unit -
Organization
Figure 012

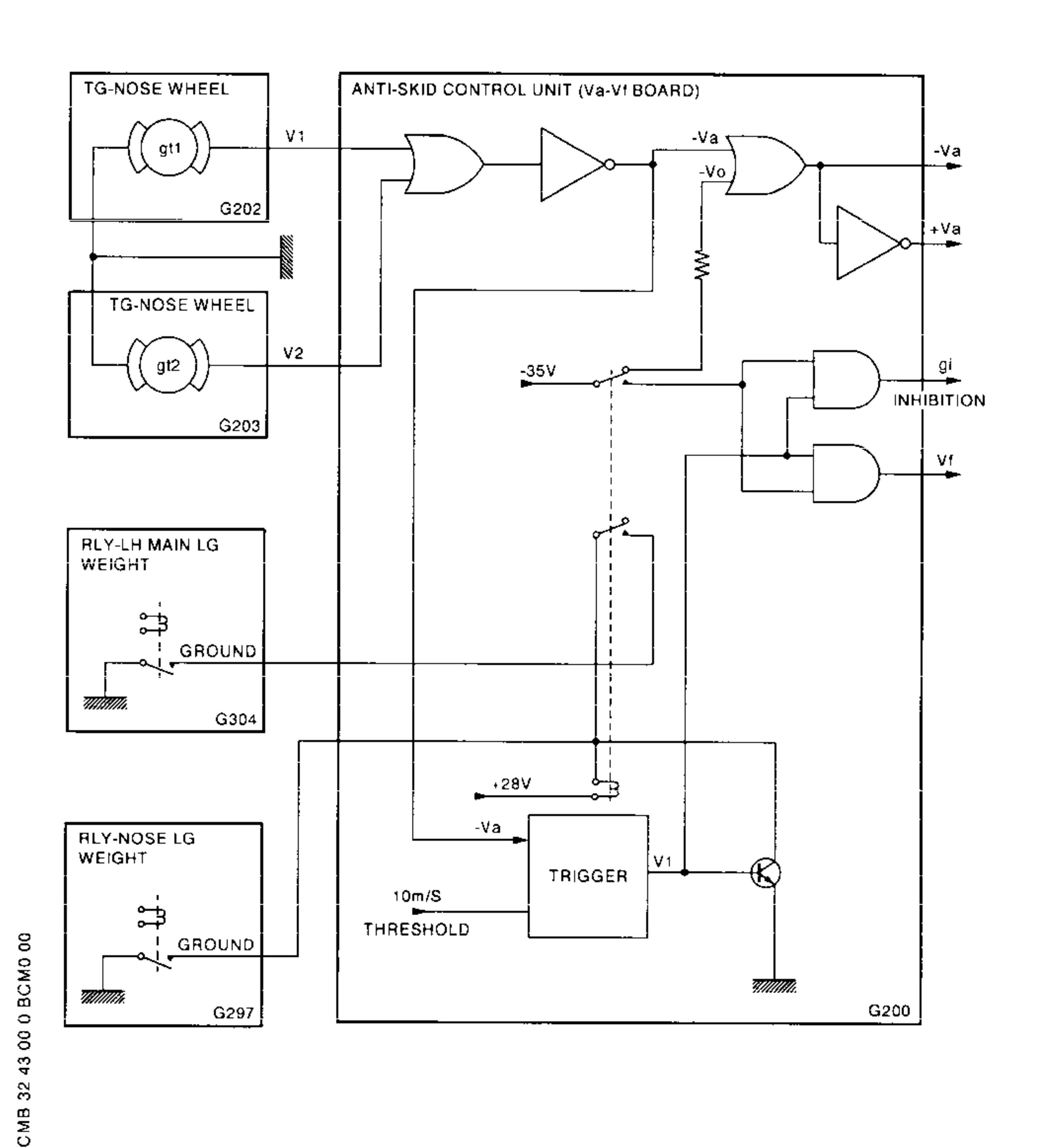
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EFFECTIVITY: ALL



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Anti-Skid Control of a Single Wheel - Schematic
R Figure 013



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Processing of Va and Vf
Figure 014

R (d) Tyre - runway grip coefficient (Ref. Fig. 011)

If P is the vertical load on the wheel and F the tangential action of the runway (drag) the grip coefficient (Mu) is defined as the ratio F/P.

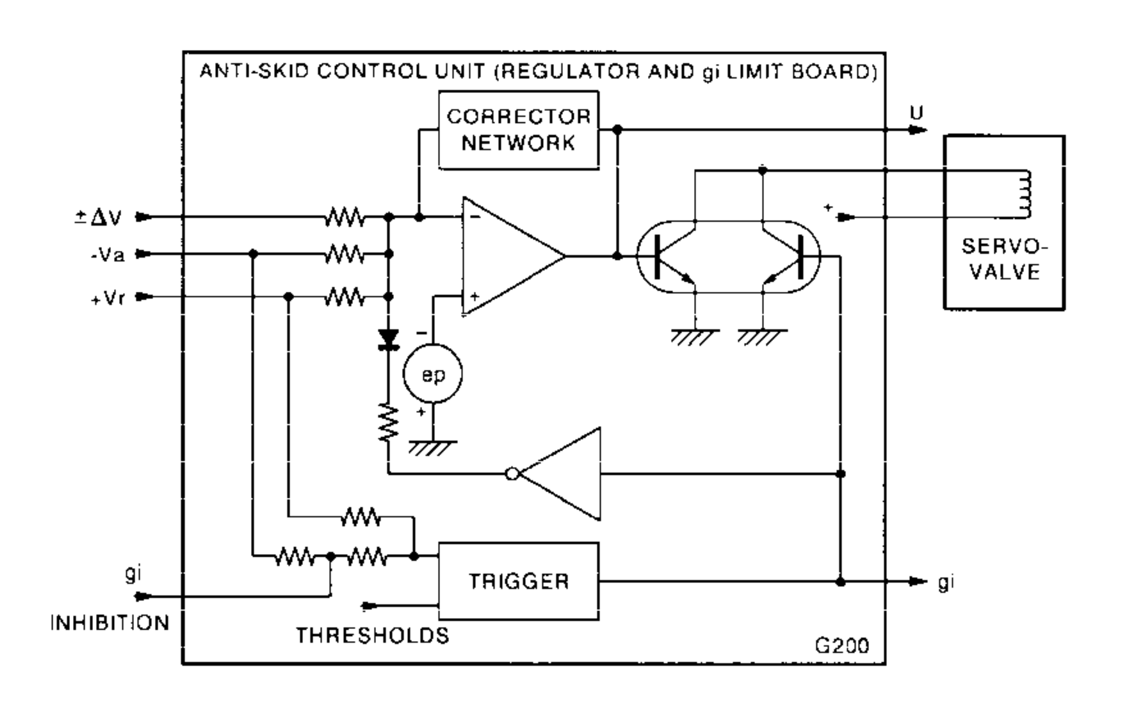
This coefficient varies with the wheel skid value according to certain groups of curves dependent mainly on:

- aircraft speed
- state of the runway (dry, wet, icy)
- state of the tyre etc.

However, the grip coefficient is generally at a maximum when the skid value is between 5 and 30%.

At any given moment (where P is taken to be constant), maximum grip corresponds to maximum drag.

R (e) Regulator (Ref. Fig. 015)



R Regulator and gi Limit
Figure 015

The input signals are the following:

- Vr speed or braked wheel sensed by its tachometer generator.
- Va speed of unbraked wheel (aircraft speed) or Vo before nose gear touch-down.
  These signals are reduced by 15% approx.
- ΔV signal provided by the computer.

The sum of the two latter signals represents the Vc speed (reference speed).
The difference between Vr and Vc after amplification constitutes the modulating signal sent to the servo-valve.

(e1) When the computer is not in operation $\Delta V = 0$).

The wheel is kept at a skid value of 15%, runway condition permitting.

If the skid value of the wheel is greater than 15%, the regulator sends a brake release signal (increases current to servo-valve) which results in a drop in pressure.

If skid value is less than 15%, the regulator sends no current.

In the case of a dry runway, or if the pilot does not depress the pedals sufficiently, braking torque can be lower than the value which could be achieved on the runway, the skid value does not reach the desired level, the regulator delivers no signal (saturation).

(e2) When the computer is in operation.

The principle remains the same, the speed of the wheel is kept at Vc.

NOTE: With the aircraft at a halt, the input signals are null (noises excluded).

The current delivered by the regulator is also null which enables the aircraft to be kept at a halt during engine run-up.

However, to avoid internal drift tending to produce a brake release signal, a signal (ep) is constantly present at the regulator to prevent the possible effects.

This very weak signal is negligible during modulation, but its relative importance increases as the signals from the tachometer generators get weaker.

Thus at low speed, the wheel is subjected to a skid value increasingly greater than 15% as the speed decreases, 100% at a speed of 1 m/sec. approx.

(f) Safety limit (gi) and braking interdiction.
R (Ref. Fig. 015).

If for one reason or another, the skid value of a wheel calculated from Va and Vr exceed 45% (gi1), a maximum brake release signal, superimposed on the modulation signal, is sent to the servo-valve.

This signal disappears when the skid value of the wheel falls below 25% (gi2) again.

During landing phase, if the pedals are depressed before touch-down, the gi limit inhibits braking (the skid value calculated from the non-rotating main gear wheel and the Vo signal being 100%).

At low speed, Vf = 10 m/sec., the gi limit is inhibited to avoid its intervention when the permissible skid value increases.

NOTE: The gi limit is operative in flight through the Vo signal.

R (g) Computer (Ref. Fig. 016)

The function of the computer is to calculate the correlation between variation in drag and variation in skid value.

R The drag value F is calculated from the torque loads acting on the wheel (Ref. Fig. 011).

The ΔV signal is obtained by integrating a g' signal generated by the computer (derived from the skid value) previously multiplied by Va.

(g1) Computer operation

When braking begins (upon depression of pedals), the ΔV value from the computer starts at zero and increases progressively.

The regulator receives a signal permitting the skid value to increase steadily thus increasing actual drag.

Actual drag is continually calculated by the computer as described above and will reach a maximum, stored in the memory, above which the wheel will tend to lock thus leading to a reduction in drag.

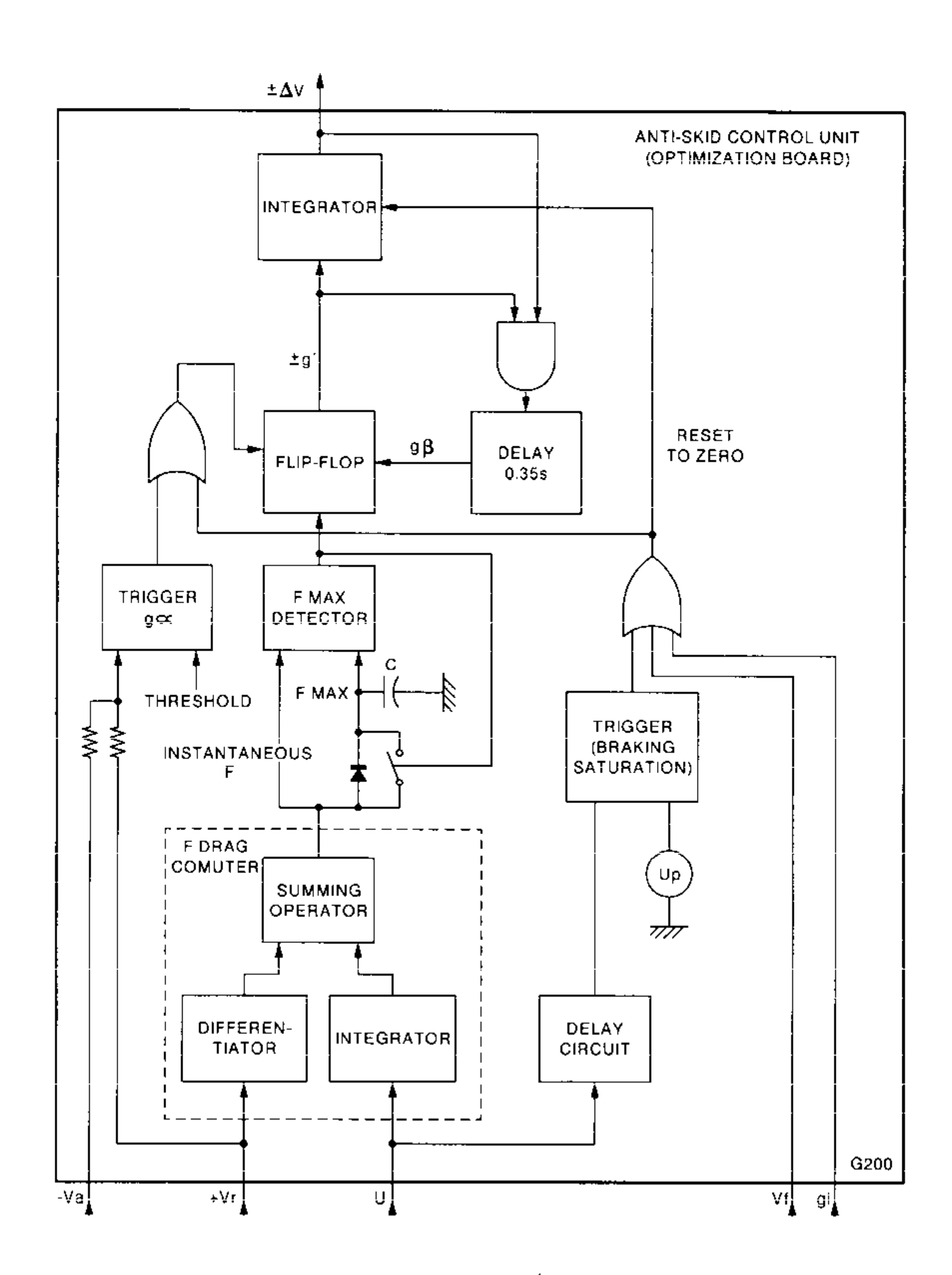
The deviation detected with respect to the maximum value in the memory triggers a flip-flop which inverses the g' unitary signal resulting in a progressive decrease of the ΔV signal and increase in drag.

This inversion cancels the drag value in the memory:

Drag will increase to a new maximum, provoking a new inversion.

R Thus a scanning range is achieved about the maximum (Ref. Fig. 011).

- if there is no maximum (very flat curve) scanning is between the two skid limits galpha and gbeta which provoke the reversal (gAlpha = 30% approx., gBeta = 7% approx.).



Processing of ΔV
Figure 016

- the frequency of the scanning sweeps is much lower than the frequency of regulator interventions.

(g2) Computer logic circuits.

The ΔV signal starts increasing as soon as braking interdiction (gi) is lifted.

The ΔV signal is therefore zero before touch-down, whether or not the pedals are depressed.

The ΔV signal is also inhibited during ground roll in the following circumstances:

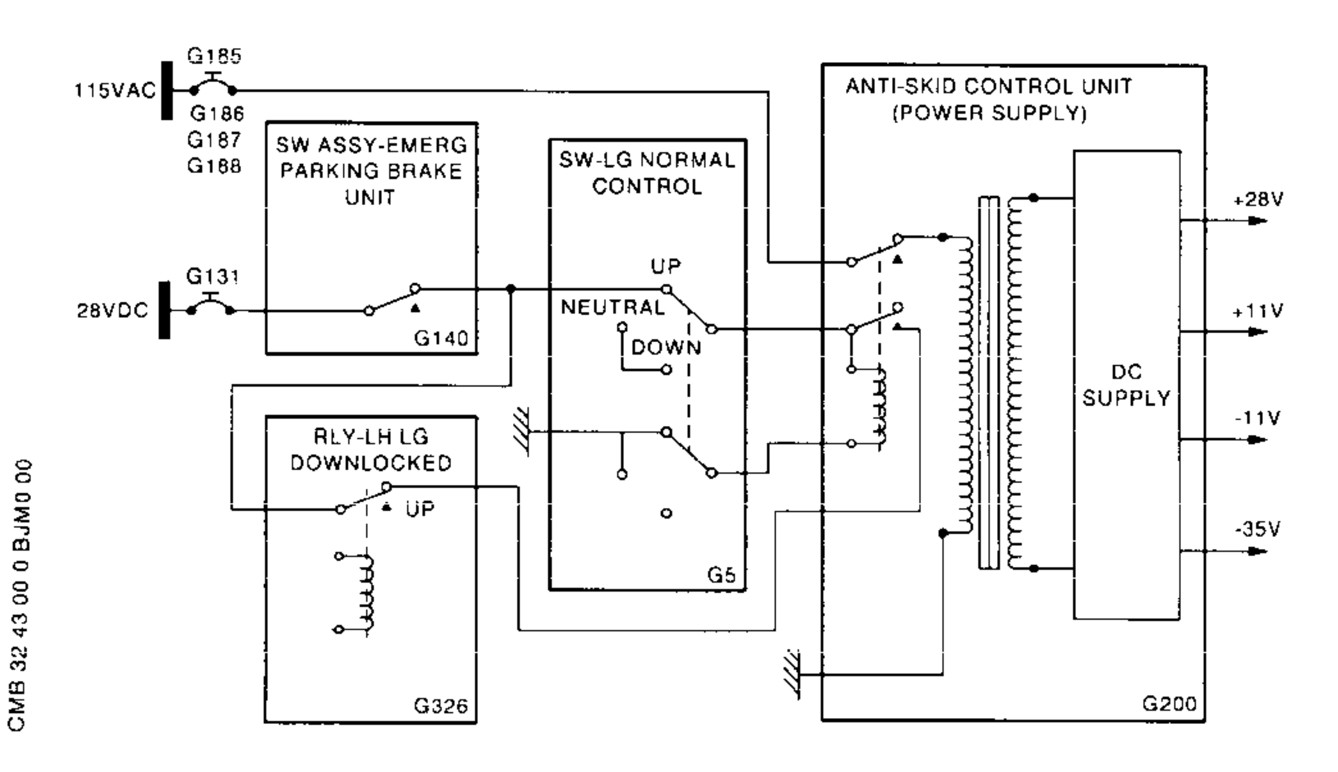
- operation of gi safety limit
- when the aircraft speed is less than vf = 10 m/sec. (at this speed the signals are too weak to be adequately processed). Braking is then subject to regulator modulation only.
- when the brake is saturated (signal from the regulator permanently null) this serves to avoid saturation of the ΔV signal resulting from the impossibility to inverse the scan because of drag saturation.

This saturation of ΔV would be such that, in the case of a locked wheel, the regulator would not respond quickly enough because all would operate as though a very high skid value were authorized.

Only the gi limit would prevent the locking of the wheel which would provoke an unwarranted scale of variation in pressure and torque likely to cause a jolt.

Each time that ΔV is cancelled the detector of maximum drag is reset to zero and the flip-flop is restored to its initial state.

R (h) Electrical power supply (Ref. Fig. 017)



R Electrical Power Supply
Figure 017

- The anti-skid control unit receives four stabilized power supplies, one for each pair of symmetrically opposed wheels.
- The control unit is powered from a different busbar than the potentiometers of the corresponding electrical control.

  Thus, if one busbar fails, either the modulating current or the control current from the pedals is present at one of the coils of the servo-valve concerned.

The power supply to the control unit from the 115V 400Hz essential bus bars 5X, 6X, 7X, 8X is cut off as soon as the landing gear Normal control lever is placed in UP position by the excitation of an internal relay. These relays are self-excited when the landing gear Normal control lever is placed back in NEUTRAL position. The relays cease to be self-excited as soon as the landing gear is downlocked.

8. Control Unit - Brakes Overload

A. General

The brakes overload control unit serves to control braking torque with respect to a reference torque which is a function of brake pedal travel.

R B. Description (Ref. Fig. 018)

(1) The brakes overload control unit (G218) is located in LH electronics rack, on shelf 9-215.

(2) The front face of the brakes overload control unit includes:

(a) Eight locking magnetic indicators which indicate excess braking torque at the corresponding wheel. The excitation of one or more of these magnetic indicators is indicated by the BRAKES OVERLOAD magnetic indicator (G227) on the Flight Engineer's panel.

(b) A TEST pushbutton and an OVERLOAD pushbutton which, when pressed simultaneously, simulate excess braking torque: a brake release signal is sent to the 8 wheels and the indicating system described above indicates overload at the 8 wheels.

(c) A RESET pushbutton which serves to cancel the permanent brake release signal and overload indication caused by the detection of excess braking torque.

(d) A galvanometer and a nine position rotary selector which serve to check the drift of each of the eight strain sensors. The ninth position of the rotary selector is the OFF position.

R

R C. Operation of the Braking Torque Control System (Ref. Fig. 019)

The special characteristicks of carbon brakes require that braking torque be limited.

For a given pedal travel, braking torque can vary from one brake to another in a ratio of 1 to 5.

The torque limit has been defined for an effective pressure of 200 bar (2900 psi) approx. and considering the torque/pressure ratio to be low, 10.5 mdaN per bar (5.34 lbf ft per psi) : i.e. Maximum reference torque (Cc) = 200 x 10.5 = 2100 mdaN (Cc = 2900 x 5.34 = 15490 lbf ft).

The braking torque control system serves to limit actual braking torque to a torque value corresponding to the pedal position, with a maximum value of 2100 mdaN (15490 lbf ft).

Depression of the pedals controls a pressure and a corresponding torque (reference torque Cc).

Maximum reference torque is achieved when pedals are depressed to, or past, the second load threshold.

During Normal braking, actual braking torque is measured by the strain sensors installed on the brake torque arms and compared with the reference torque corresponding to the pedal position.

A servo loop reduces the pressure ordered if the measured torque is greater than the reference torque.

The reference torque having been calculated for a low torque/pressure ratio, during ground roll, as the torque/pressure ratio is usually greater, the system orders a reduction in pressure (limiting signal).

Thus the system operates as a regulator since the pressure can increase or decrease if the actual braking torque varies, according to the amplitude of the limiting signal (current superposed on servo-valve control coil).

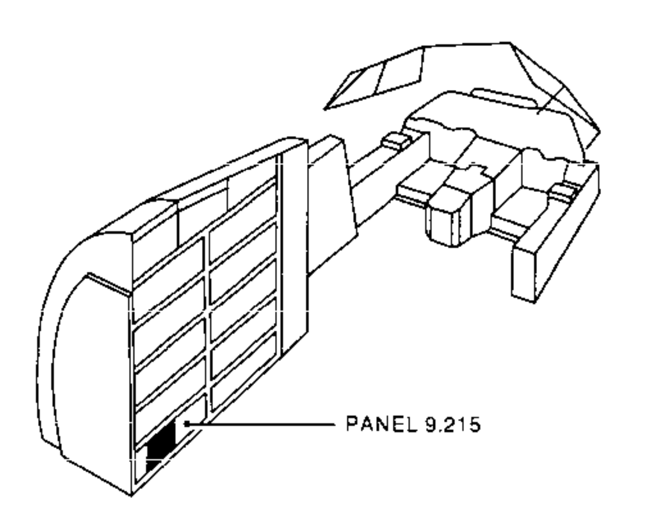
(1) Control law.

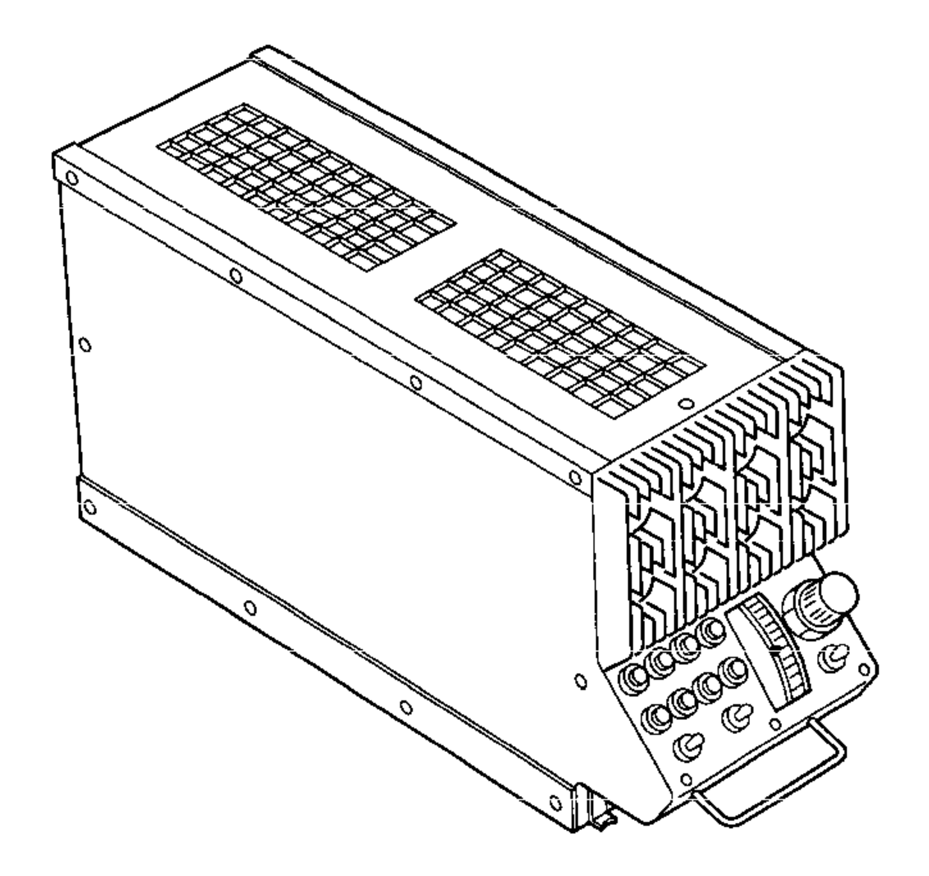
R (a) Static law.

The static law controls the current generator that drives the servo-valve according to the signal received from the pedal position transmitter.

The static law limits the pressure at the brakes from 0 to 230 bar (3336 psi) corresponding to a current at the servo-valve of 10 mA for zero pressure and 2.7 mA for maximum pressure. The maximum pressure signal (2.7 mA) is obtained for a pedal travel of 12 degrees or more.

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Brakes Overload Control Unit - Location and Front Face
R Figure 018

The rise in pressure (passing of current from 10 to 2.7 mA) is limited to 70 bar/sec. (1015 psi/sec.).

(b) Torque law.

The torque law is calculated from the static law. It provides the comparator with the ideal torque value according to pedal travel (reference torque Cc).

The maximum reference torque, corresponding to a pedal travel of 12 degrees or more, is 2100 mdaN (15490 lbf ft).

The minimum reference torque is 160 mdaN (1180 lbf ft).

(c) Servo loop.

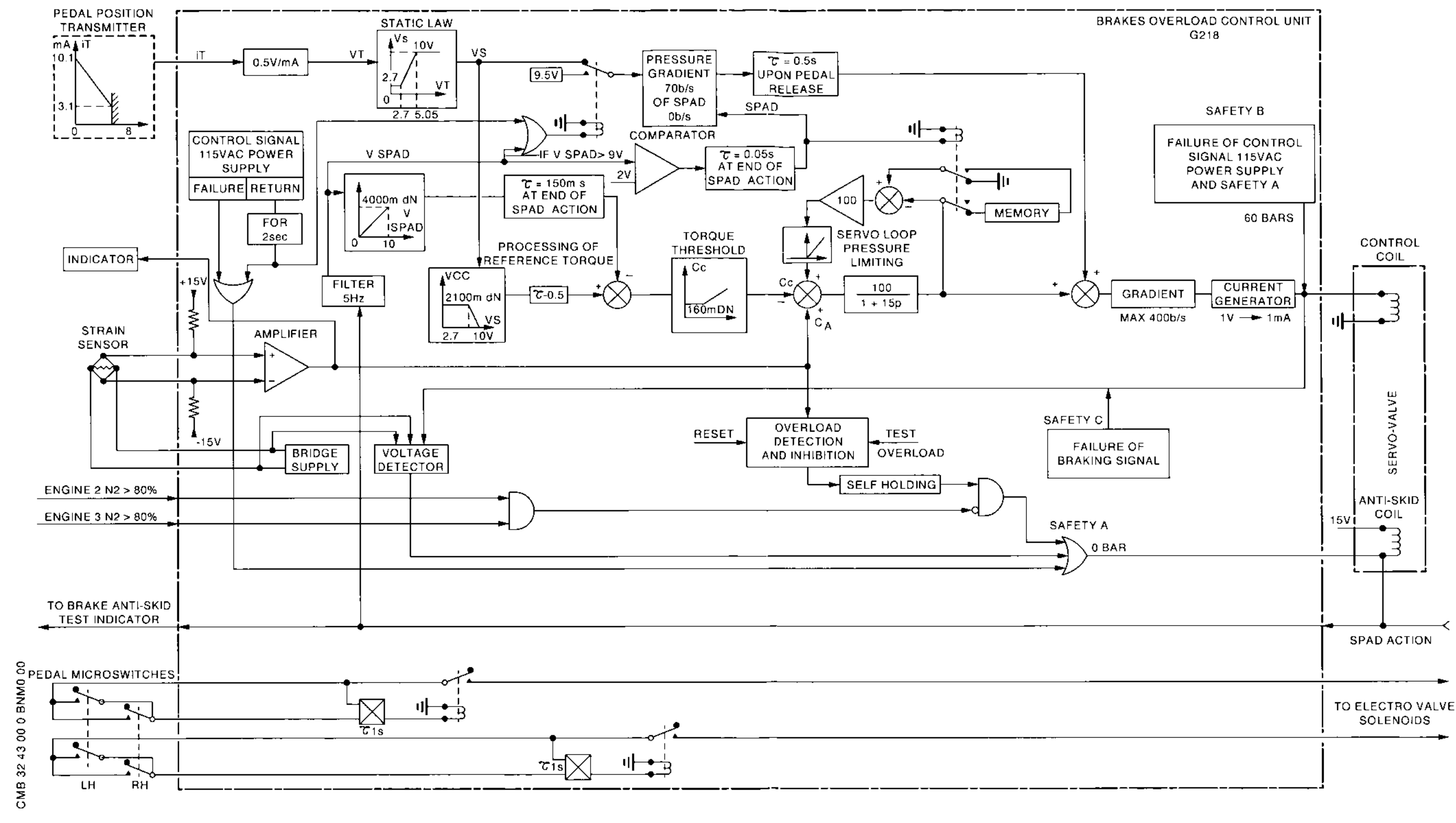
The aircraft torque measured by the strain sensors is compared with the reference torque:

- If the aircraft torque is less than the reference torque the error amplifier sends no signal.
- If the aircraft torque is greater than the reference torque the error amplifier sends a limiting signal which limits the aircraft torque to the reference torque value.

(d) Compatibility with brake anti-skid system.

To prevent the brakes overload control system countering the action of the brake anti-skid control system, the anti-skid signal sent directly to one of the servo-valve coils, is also sent to the brakes overload system servo loop input to reduce the reference torque. The pressure controlled by the brakes overload control system cannot increase during anti-skid control system action.

Furthermore the value of the limiting signal current, present before the action of the anti-skid control system is memorized (blocking of limiting level) so that when the action of the anti-skid control system ceases, the initial condition is re-established.



Brakes overload control Unit - Schematic
R Figure 019

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During the action of the anti-skid control system, a situation could arise, according to the state of the runway, in which the aircraft torque (Ca) fall below the reference torque (Cc), which would result in the brakes overload control system servo loop reducing the level of the limiting signal. The above device limits this reduction to the memorized level.

Should anti-skid control system action cease suddenly (passing abruptly from wet to dry runway surface) the brakes overload control system servo loop could only generate a limiting signal superior or equal to the memorized level.

Aircraft torque could not exceed the torque obtained before the action of the anti-skid control system.

When the brake anti-skid control unit orders full brake release (gi limit) a signal corresponding to pedals released position is substituted for the actual pedal position signal.

When the full brake release signal (gi limit) disappears, pressure is re-established as though it were the beginning of braking (rise in pressure 70 bar/sec. (1015 psi/sec)).

(e) Ancillary function (gradient).

Under no circumstances can the rise in pressure exceed 400 bar/sec. (5800 psi/sec).

This limitation (gradient) is located upstream of the servo-valve current generator.

(2) Safety features.

(a) Safety A.

Triggering of safety A results in full brake release (10 mA approx. at servo-valve anti-skid coil).

(b) Safety B.

Triggering of safety B prevents wheel locking and limits pressure at the brakes to 60 bar (870 psi) by acting on the servo-valve control coil.

This safety feature is powered from a 28 V DC bus-bar (1P).

R

(c) Safety C.

Safety C is triggered by failure of the braking control signal.

It maintains a 2.7 mA current at the servo-valve control coil (pressure at the brake 230 bar (3336 psi)).

(d) Failure of the strain sensor power supply, cutting off or grounding of circuit downstream of the current generator, triggers safety A. As soon as the fault disappears, safety A is lifted and the system returns to normal operation.

- An overload (torque greater than 2900 mdaN (21400 lbf ft)) triggers safety A with self-holding. The overload is indicated by the corresponding magnetic indicator on the brakes overload control unit and the BRAKES OVERLOAD magnetic indicator on the Flight Engineer's panel.
  Detection of an overload therefore provokes permanent release of the brake concerned, except when the throttle control levers for engines 2 and 3 are in a position greater than 80% of N2 (microswitch boxes 2K1548, 3K1548) i.e. no brake release signal from brakes overload control unit at pedal release.
  After detection of an overload the system is reset by pressing the RESET pushbutton on the brakes overload control units.

- Failure of the brakes overload control unit 115 V 400 Hz triggers safety A and safety B for two symmetrically opposed wheels.
  Upon return of the 115 V 400 Hz safety A is self-held for two seconds and substitutes a signal corresponding to the pedals released position for the actual pedal position signal. Two seconds after the return of 115 V 400 Hz pressure is re-established at the brakes as through it were the beginning of braking (rise in pressure 70 bar/sec. (1015 psi/sec)). Failure of 115 V 400 Hz from bus-bars 5X, 6X, 7X and 8X triggers safety B.

  NOTE: Safety A no longer supplied.

(e) Protection against cutting-off of strain sensor.

Absence of brake torque control can result in excessive energy at the brakes which could lead to wheel explosion.

To eliminate this risk, the brakes overload control unit has been so designed that, in the event of rupture of the strain sensor connections or cutting-off of the strain sensor signal, the amplifier input signal is out of balance. The amplifier output signal is then -15 volts corresponding to a torque exceeding 6000 mdaN (44250 lbf ft).

Thus the overload safety feature operates instantaneously and sends a 'maximum brake release' signal.

(3) Power Supply

The brakes overload control unit is powered by:

- four 115 V 400 Hz essential AC bus-bars (5X, 6X, 7X and 8X): one for each pair of symmetrically opposed wheels.
- one 28V DC bus-bar (1P).

115 V 400 Hz ESS AC BUS-BAR	WHEELS AND FUNCTIONS CONCERNED	
	ANTI-SKID	BRAKES OVERLOAD CONTROL UNIT CONTROL LAW
	BRAKES OVERLOAD CONTROL UNIT SAFETY A	STRAIN SENSOR POWER SUPPLY
5X	LH AFT OUTER (5) RH AFT OUTER (8)	LH AFT OUTER (5) RH AFT OUTER (8)
6X	LH AFT INNER (6) RH AFT INNER (7)	LH AFT INNER (6) RH AFT INNER (7)
7X	LH FWD INNER (2) RH FWD INNER (3)	LH FWD INNER (2) RH FWD INNER (3)
8X	LH FWD OUTER (1) RH FWD OUTER (4)	LH FWD OUTER (1) RH FWD OUTER (4)

R Brake and Bus-bar Cross
R Reference Chart
R Table 1

9. Indicator - Brake ANTI-SKID and NOSEWHEEL Steering TEST
R (Ref. Fig. 020)

Eight indicator lights are grouped on brake ANTI-SKID TEST indicator (G190) located on the First Officer's instrument panel.

One R indicator light is assigned to each main gear wheel and illuminates to indicate a brake release signal, generated by the anti-skid control unit to the corresponding wheel.

A spring-loaded TEST 1/neutral/TEST 2 switch serves to check the two nose wheel tachometer generators for correct condition. In TEST 1 position, generator (G203) circuit is tested. In TEST 2 position, generator (G202) circuit is tested.

NOTE: A three-position (TEST/HI/LO) switch on First Officer side console serves, when placed in TEST position, to check condition of indicator lamps and, when placed in LO position, to dim lamps.

R
10. Wheel Temperature
R (Ref. Fig. 021)

The temperature of each main gear wheel brake unit is detected by a sensor whose resistance varies with the temperature of the brake unit.

This temperature sensor forms part of a Wheatstone bridge which is out of balance as soon as there is a rise in temperature.

The difference in voltage resulting from this state of imbalance is detected by a differential amplifier (wheel overheat indication amplifier G336). The amplified signal switches on a transistor and one of the eight lights on BRAKES TEMP indicator (G341), located at Flight Engineer's station, illuminates.

Each of the eight lights is integral with a pushbutton which, when depressed, causes the temperature of the corresponding brake unit to be displayed on a common indicator.

When all the integral-light pushbuttons are released, the indicator displays the temperature of the hottest brake unit.

When one or more of the eight lights on indicator (G341) illuminates, a WHEEL warning light (G346), located on First Officer's panel, warns the First Officer of brake overheating.

A TEST button located on indicator G341 enables the channel to be checked for correct operation.

A three-position (TEST/HI/LO) switch located on First Officer's side console, when placed in TEST position, enables WHEEL warning light filament to be checked for correct condition and dims the light when placed in LO position.

A three-position (TEST/HI/LO) switch located on Flight Engineer's panel 12-214, when placed in TEST position enables lamps of lights on BRAKES TEMP indicator to be checked for correct condition and dims the lights when placed in LO position.

11. Operation

A. Aircraft in Flight, Landing Gear Retracted

With the aircraft in flight and landing gear retracted, only the pedal position transmitter, the brakes overload control unit and the brake ANTI-SKID TEST indicator are supplied with electrical power. The R lights on the brake ANTI-SKID TEST indicator are off.

B. Approach, Landing Gear Extended

Extension of the landing gear causes the anti-skid control unit to be supplied with electrical power via relay (G236). Vo is operative and a brake release signal is sent to the eight servo-valves. The eight R lights on the brake ANTI-SKID TEST indicator come on.

C. Touch-Down of Main Gear Wheels

Upon touch-down the main gear wheels immediately start rotating Vo remains in operation (Vo being calibrated at a speed greater than 100 m/sec. the skid value prohibits all braking).

The R lights on the brake ANTI-SKID TEST indicator remain on.

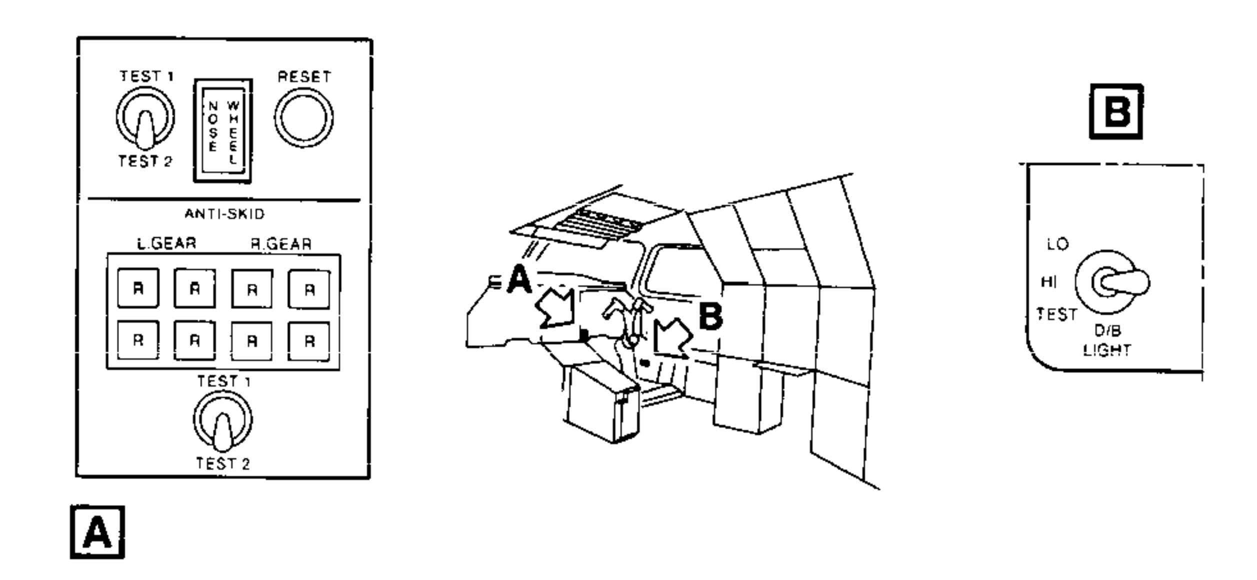
D. Touch-Down of Nose Gear Wheels

Compression of the nose gear shock absorber substitutes Va for Vo. The brakes are then applied with anti-skid and braking torque modulation.

The R lights go out and only come on when the anti-skid control unit sends a brake release signal to the corresponding wheel.

E. Low Speed Ground Roll

With speeds of 10 m/sec. or below braking optimization is replaced by a reference skid value function of aircraft speed. The brakes overload system remains in operation. The gi limits are cancelled.

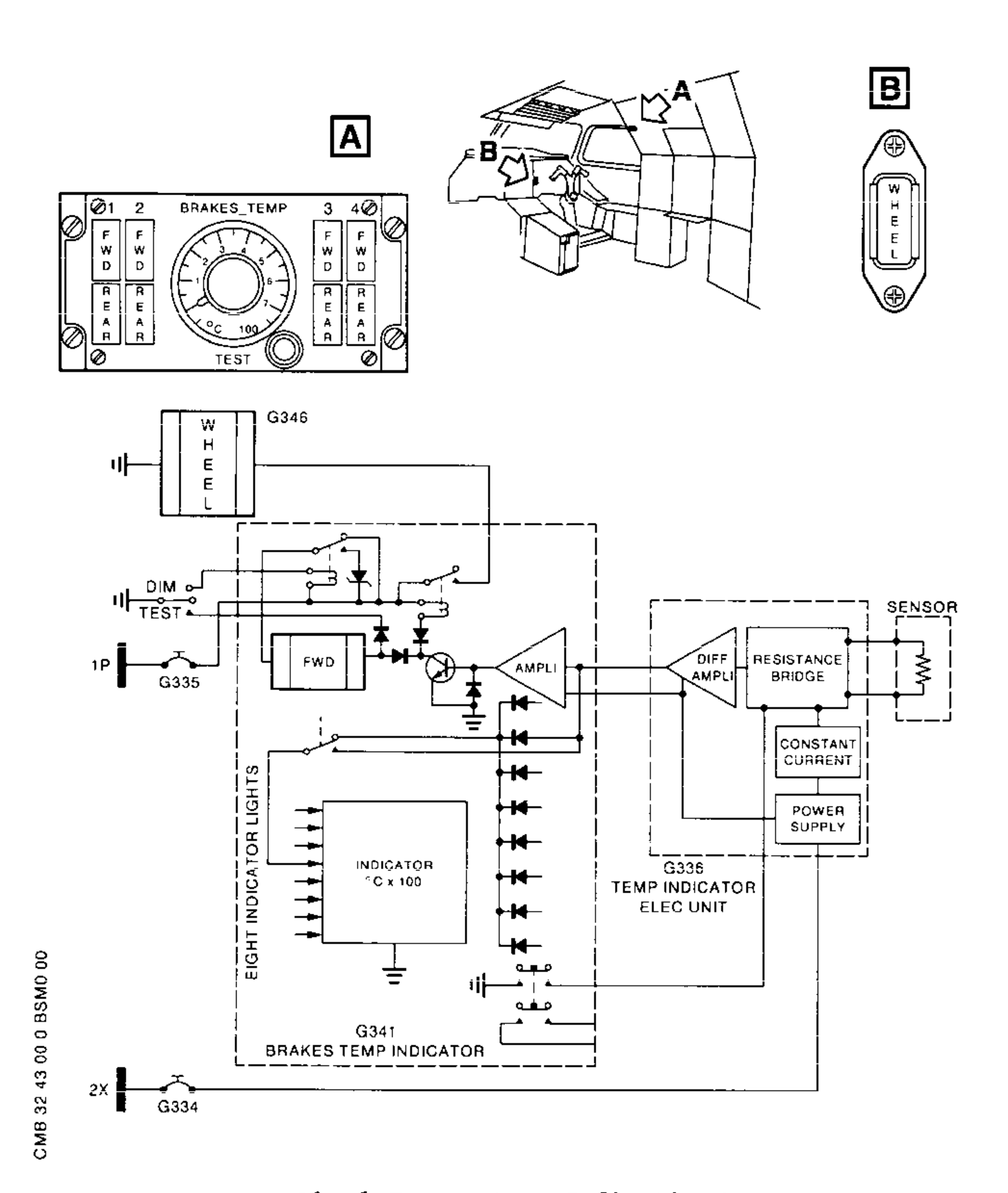


G190
BRAKE RELEASE SIGNAL
BRAKE RELEASE SIGNAL
NOSE WHEEL
ANTI-SKID
L GEAR
R GEAR
NOSE GEAR STEERING
RESET
GRD TEST 1
GRD TEST 2
NOSE WHEEL GENERATOR 1 TEST
INTEGRAL LIGHTING
TEST 1
TEST 2
BRAKE RELEASE SIGNAL
NOSE WHEEL GENERATOR 2 TEST
DIM
BRAKE RELEASE SIGNAL
NOSE WHEEL STEERING SYSTEM

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Brake ANTI-SKID and NOSEWHEEL Steering
TEST Indicator
Figure 020

R



Wheel Temperature Indicating/
Location and Operation
Figure 021

F. Automatic Braking of Main Gear Wheels during Landing Gear Retraction
R (Ref. Fig. 004)

Placing the landing gear Normal control lever in UP position, supplies, via relay (G326):

- the Normal braking supply selector valve electrovalve.
- the two pedal position transmitter relays which send a braking signal corresponding to 160 bar (2320 psi).

As soon as the main gear unlocks the relay (G326) cuts off power to the Normal braking supply selector valve electro-valve and the pedal position transmitter relays.

Braking of main gear wheels during retraction is therefore limited to the door opening sequence to minimize the loss of fluid should a leak occur at the brakes.

NORMAL BRAKING - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, SERVICING.

1. General

This trouble shooting is intended to enable the faults found in the Normal braking system to be quickly rectified.

The defect can be isolated with the aid of trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.
Bracketed numbers in the procedures and charts indicate items on the Component Identification Table (Ref. Table 101). The table provides information, including component location required for rectification.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, and that electrical power is available, unless otherwise stated. If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

R NOTE : If vibrations at the brake units are noted during very
R low speed ground roll, bleed Normal braking system
R (Ref. 32-43-00, Servicing) before proceeding with trou-
R ble shooting.

2. Prepare

A. On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

B. On centre console, make certain that brake selector lever is in NORM position.

C. Position wheel chocks.

D. Check that the following circuit breakers are set :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	NOSE UC WEIGHT SW 'A' SYS SUP	1-213	G 291	M16
	LH UC WEIGHT SW 'A' SYS SUP		G 292	M17
	WHEEL BRAKE 'A' SYS CONT O/LOAD IND		G 131	S16
	REAR OUTER WHEELS BRAKE CONT		G 183	S17
	FWD OUTER WHEELS BRAKE CONT		G 184	S18
RB	WHEEL BRAKES TEST IND & SUP		G9001	S15
	WHEELS 5 & 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
	WHEELS 6 & 7 A/SKID & ADAPT AMPS SUP		G 188	G15
	LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
	REAR INNER WHEELS BRAKE CONT		G 181	C 9
	FWD INNER WHEELS BRAKE CONT		G 182	C10
	WHEEL BRAKE 'B' SYS CONT		G 132	D 9
	WHEELS 2 & 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
	WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP		G 186	F10
	WHEELS O/HEAT DETECT SUP	13-215	G 334	C 8
	NOSE WHEEL STEERING IND	15-215	G 92	B 6
RB	WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
	PLTS LT TEST SUP		L1001	E14
	WHEEL O/HEAT IND		G 335	F 7

E. Energise the aircraft electrical network (Ref. 24-41-00, Servicing).

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE SURE THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

F. Measurement of I1 and I2 Control Signals.

WARNING: MAKE CERTAIN THAT GREEN AND YELLOW HYDRAULIC SYSTEMS ARE DEPRESSURIZED.

(1) Trip, safety and tag the following circuit breakers.

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	WHEEL BRAKE 'A' SYS CONT O/LOAD	1-213	G 131	S16
	REAR OUTER WHEELS BRAKE CONT		G 183	S17
	FWD OUTER WHEELS BRAKE CONT		G 184	S18
RB RB	WHEEL BRAKES TEST IND & SUP		G9001	S15
	WHEEL 5 & 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
	WHEELS 6 & 7 A/SKID & ADAPT AMPS SUP		G 188	G15
	REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
	FWD INNER WHEELS BRAKE CONT		G 182	C10
	WHEELS 2 & 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
	WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP		G 186	F10
RB RB	WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6

(2) On main landing gear concerned (LH or RH) remove side cover.

(3) Disconnect electrical connector from servo-valve concerned.

(4) On terminal C, connect a milliammeter (0-20mA) between connector and receptacle. (Skid signal I2 reading).

(5) On terminal F, connect a milliammeter (0-20mA) between connector and receptacle. (Skid signal I1 reading).

(6) Ensure continuity between connector and receptacle terminals A and E.

(7) Remove safety clips and tags and reset circuit breakers tripped in (1).

INTENTIONALLY BLANK

3. Trouble Shooting

```
*****************************************************
* On centre console, place LIGHTS TEST switch in    *
* TEST position.                                    *
* On centre instrument panel BRAKES FAIL warning    *
* light illuminates.                                *
*****************************************************
   ||      |
   ||      |     ---------------------------------------------------
   OK      NOT OK-| Replace BRAKES FAIL warning light [17].          |
   ||            ---------------------------------------------------
   ||
*****************************************************
* On RH side console, place LIGHTS TEST switch in   *
* TEST position.                                    *
* On F/O instrument panel WHEELS O/HEAT warning     *
* light illuminates. On ANTI SKID test indicator,   *
* the 8 R lights illuminate.                        *
*****************************************************
   ||      |
   ||      |     ---------------------------------------------------
   OK      NOT OK-| WHEELS O/HEAT warning light remains extinguished:|
   ||      |      | Replace WHEELS O/HEAT warning light [37]         |
   ||      |     ---------------------------------------------------
   ||      |
   ||      |     ---------------------------------------------------
   OK      NOT OK-| The 8 R lights on ANTI SKID test indicator remain|
   ||      |      | extinguished. Ref. Chart 101.                    |
   ||      |     ---------------------------------------------------
   ||      |
   ||      |     ---------------------------------------------------
   OK      NOT OK-| One or more R lights on ANTI SKID test indicator |
   ||             | remain extinguished: Replace ANTI SKID indicator |
   ||             | [22].                                            |
   ||            ---------------------------------------------------
   ||
*****************************************************
* On Flight Engineer panel 12-214, place LIGHTS     *
* TEST switch in TEST position :                    *
* The 8 BRAKES TEMP warning lights illuminate on    *
* BRAKES TEMP indicator.                            *
*****************************************************
   ||      |
   ||      |     ---------------------------------------------------
   OK      NOT OK-| The 8 warning lights on BRAKES TEMP indicator    |
   ||      |      | remain extinguished. Ref. Chart 102.             |
   ||      |     ---------------------------------------------------
   ||      |
   ||      |
```

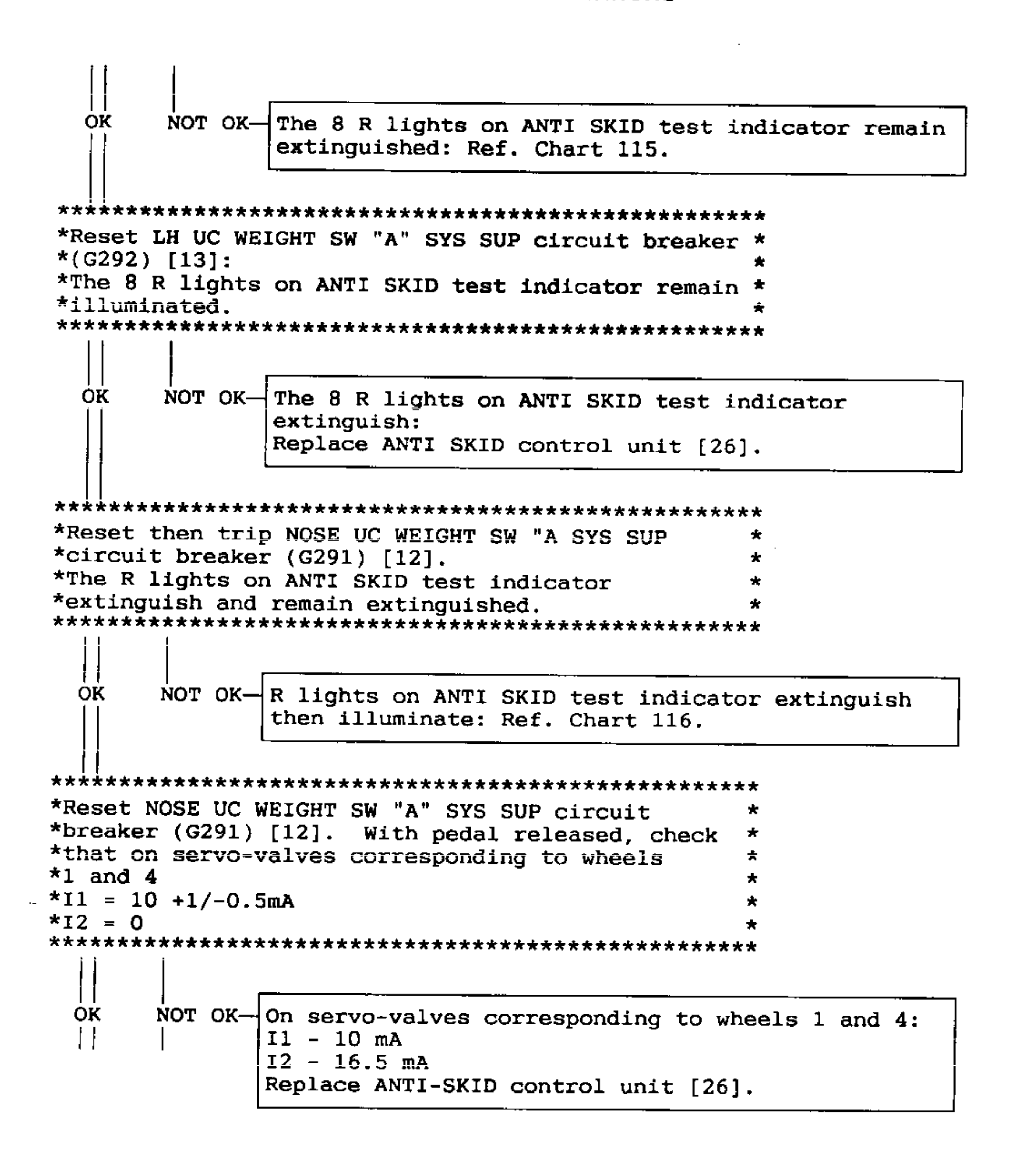
```
   ||       |
   ||       |    -------------------------------------------------
   OK     NOT OK-| One or more warning lights on BRAKES TEMP     |
   ||            | indicator remain extinguished: Replace BRAKES |
   ||            | TEMP indicator [36].                          |
   ||            -------------------------------------------------
   ||
*****************************************************
* On F/O instrument panel, place TEST1/TEST2 switch *
* on ANTI SKID test indicator in TEST 1 position :  *
* The 8 R lights on ANTI SKID test indicator illumi-*
* nate.                                             *
*****************************************************
   ||       |
   ||       |    -------------------------------------------------
   OK     NOT OK-| During ANTI SKID test, the 8 R lights on ANTI |
   ||       |    | SKID indicator remain extinguished.           |
   ||       |    | Ref. Chart 103.                               |
   ||       |    -------------------------------------------------
   ||       |
   ||       |    -------------------------------------------------
   OK     NOT OK-| During ANTI SKID test, one or more R lights on|
   ||       |    | ANTI SKID indicator remain extinguished.      |
   ||       |    | Ref. Chart 104.                               |
   ||       |    -------------------------------------------------
   ||       |
   ||       |    -------------------------------------------------
   OK     NOT OK-| During ANTI SKID test, two R lights on ANTI SKID |
   ||            | indicator, corresponding to two symmetrical   |
   ||            | wheels do not illuminate. Ref. Chart 105.     |
   ||            -------------------------------------------------
   ||
*****************************************************
* On F/O instrument panel, place TEST1/TEST2 switch *
* on ANTI SKID test indicator in TEST 2 position :  *
* The 8 R lights on ANTI SKID test indicator illumi-*
* nate.                                             *
*****************************************************
   ||       |
   ||       |    -------------------------------------------------
   OK     NOT OK-| The 8 R lights on ANTI SKID indicator remain  |
   ||            | extinguished: Replace nosewheel tachometer    |
   ||            | generator G202 [27].                          |
   ||            -------------------------------------------------
   ||
   ||
```

```
   ||
   OK
   ||
*****************************************************
* In electronics rack 9-215, on brakes overload     *
* control unit, perform overload test. The 8        *
* magnetic indicators show white. On Flight Engineer*
* panel 12-214, the BRAKES OVERLOAD magnetic indi-  *
* cator shows white                                 *
*****************************************************
   ||       |
   ||       |      ---------------------------------------------
   OK      NOT OK-| On brakes overload control unit, one or more |
   ||       |     | magnetic indicators remain black. Replace brakes |
   ||       |     | overload control unit G218 [28].              |
   ||       |      ---------------------------------------------
   ||       |
   ||       |      ---------------------------------------------
   OK      NOT OK-| BRAKES OVERLOAD magnetic indicator remains black:|
   ||             | Ref. Chart 106.                               |
   ||              ---------------------------------------------
   ||
*****************************************************
* On brakes overload control unit perform reset :   *
* The 8 magnetic indicators show black. On Flight   *
* Engineer panel 12-214, BRAKES OVERLOAD magnetic   *
* indicator shows black.                            *
*****************************************************
   ||       |
   ||       |      ---------------------------------------------
   OK      NOT OK-| On brakes overload control unit, one or more |
   ||       |     | magnetic indicators remain white: Replace brakes |
   ||       |     | overload control unit G218 [28].              |
   ||       |      ---------------------------------------------
   ||       |
   ||       |      ---------------------------------------------
   OK      NOT OK-| BRAKES OVERLOAD magnetic indicator remains white.|
   ||             | Ref. Chart 107.                               |
   ||              ---------------------------------------------
   ||
*****************************************************
* On brakes overload control unit, using rotary     *
* selector, check drift of each strain sensor.      *
* (tolerance ± 450mV).                              *
*****************************************************
   ||       |
   OK      NOT OK
   ||       |
   ||       |
   ||       |
```

```
  ||        |
  ||        |     ----------------------------------------------
  OK      NOT OK-| Strain sensor(s) drift out of tolerance : Replace|
  ||             | brake torque arm or permute strain sensors [29]. |
  ||             | Check brake unit (Ref. 05-53-11).                |
  ||              ----------------------------------------------
  ||
*****************************************************
* On Flight Engineer panel, press TEST pushbutton on*
* BRAKES TEMP indicator: The eight warning lights   *
* illuminate. Temperature indicator indicates 280°C *
* approx. On F/O instrument panel, WHEELS O/HEAT    *
* warning light illuminates.                        *
*****************************************************
  ||        |
  ||        |     ----------------------------------------------
  OK      NOT OK-| The eight warning lights on BRAKES TEMP indicator|
  ||        |    | remain extinguished.                             |
  ||        |    | Temperature indicator indicates zero.            |
  ||        |    | On F/O instrument panel, WHEELS O/HEAT warning   |
  ||        |    | light remains extinguished. Ref. Chart 108.      |
  ||        |     ----------------------------------------------
  ||        |
  ||        |     ----------------------------------------------
  OK      NOT OK-| On F/O instrument panel, WHEELS O/HEAT warning   |
  ||        |    | light remains extinguished. Ref. Chart 109.      |
  ||        |     ----------------------------------------------
  ||        |
  ||        |     ----------------------------------------------
  OK      NOT OK-| On BRAKES TEMP indicator, temperature indicator  |
  ||        |    | remains at 0°C: Replace BRAKES TEMP indicator    |
  ||        |    | [36].                                            |
  ||        |     ----------------------------------------------
  ||        |
  ||        |     ----------------------------------------------
  OK      NOT OK-| On BRAKES TEMP indicator, the four warning lights|
  ||        |    | corresponding to the RH or LH landing gear remain|
  ||        |    | extinguished. Ref. Chart 110.                    |
  ||        |     ----------------------------------------------
  ||        |
  ||        |     ----------------------------------------------
  OK      NOT OK-| One warning light on BRAKES TEMP indicator       |
  ||             | remains extinguished: Ref. Chart 111.            |
  ||              ----------------------------------------------
  ||
```

```
  ||
  OK
  ||
******************************************************
* Place brake selector lever in NORM position.       *
* Depress Captain or F/O RH and LH pedals: BRAKES    *
* FAIL warning light illuminates.                    *
******************************************************
  ||      |
  ||      |       ---------------------------------------------------
  OK      NOT OK-| BRAKES FAIL warning light remains extinguished   |
  ||             | Ref. Chart 112.                                   |
  ||              ---------------------------------------------------
  ||
******************************************************
* Trip WHEEL BRAKE "B" SYS CONT circuit breaker      *
* (G132). Depress Captain or F/O RH pedal: On centre*
* instrument panel, BRAKES FAIL warning light illu- *
* minates.                                           *
******************************************************
  ||      |
  ||      |       ---------------------------------------------------
  OK      NOT OK-| With WHEEL BRAKE "B" SYS CONT circuit breaker    |
  ||             | (G132) tripped, BRAKES FAIL warning light remains|
  ||             | extinguished. Ref. Chart 113.                     |
  ||              ---------------------------------------------------
  ||
******************************************************
* Release RH pedal: BRAKES FAIL warning light        *
* extinguishes.                                      *
* Depress Captain or F/O LH pedal: BRAKES FAIL war- *
* ning light illuminates.                            *
******************************************************
  ||      |
  ||      |       ---------------------------------------------------
  OK      NOT OK-| BRAKES FAIL warning light remains extinguished   |
  ||             | Replace brake pedal transmitter [23].             |
  ||              ---------------------------------------------------
  ||
  ||
  ||
  ||
  ||
  ||
  ||
  ||
  ||
```

```
  ||
  OK
  ||
*****************************************************
* Trip WHEEL BRAKE "A" SYS CONT O/LOAD IND circuit  *
* breaker (G131) [7].                               *
* On electrical connector (G137A) of Normal braking *
* supply selector valve, connect voltmeter between  *
* terminals A and C then reset WHEEL BRAKE "A" SYS  *
* CONT O/LOAD IND circuit breaker (G131).           *
* Voltmeter reads 0 volt.                           *
*****************************************************
  ||      |
  ||      |  ------------------------------------------------
  OK      NOT OK-| Voltmeter reads 28 volts:                  |
  ||             | Replace brake pedal transmitter [23]       |
  ||             ------------------------------------------------
  ||
*****************************************************
* Depress Captain or F/O RH pedal.                  *
* Voltmeter reads 28 volts                          *
*****************************************************
  ||      |
  ||      |  ------------------------------------------------
  OK      NOT OK-| Voltmeter reads 0 volt. Ref. Chart 114.    |
  ||             ------------------------------------------------
  ||
*****************************************************
* Release RH pedal. Depress LH pedal:               *
* Voltmeter reads 28 volts                          *
*****************************************************
  ||      |
  ||      |  ------------------------------------------------
  OK      NOT OK-| Voltmeter reads 0 volt:                    |
  ||             | Replace brake pedal transmitter [23].      |
  ||             ------------------------------------------------
  ||
*****************************************************
* Trip NOSE UC WEIGHT SW "A" SYS SUP circuit breaker*
* (G291) [12] and LH UC WEIGHT SW "A" SYS SUP cir-  *
* cuit breaker (G292) [13] :                        *
* On F/O instrument panel, the 8 R lights on ANTI   *
* SKID test indicator illuminate.                   *
*****************************************************
  ||      |
  OK    NOT OK
  ||      |
  ||      |
  ||      |
  ||      |
  ||      |
```



R

Continued on Page 114

R
R INTENTIONALLY BLANK
R

R
R INTENTIONALLY BLANK
R

R

OK | NOT OK — On servo-valves corresponding to wheels 1 and 4:
I1 = 2.7mA
I2 = 0
Ref. Chart 117.

OK | NOT OK — On servo-valve corresponding to wheels 1 or 4:
I1 = 2.7mA
I2 = 0
Ref. Chart 118.

OK | NOT OK — On servo-valves corresponding to wheels 1 and 4:
I1 = 4.1mA
I2 = 0
Replace brake pedal transmitter [23].

OK | NOT OK — On servo-valve corresponding to wheels 1 or 4:
I1 = 10mA
I2 = 10mA
Ref. Chart 119.

OK | NOT OK — On servo-valve corresponding to wheels 1 and 4:
I1 = 10mA
I2 = 10mA
Replace brakes overload control unit [28].
Check brake unit (Ref. 05-53-11).

OK | NOT OK — On servo-valves corresponding to wheels 1 or 4:
I1 = 0
I2 = 10mA
Check electrical wiring between overload control unit and suspect servo-valve.

```
R      ||        |       ------------------------------------------------
R      OK      NOT OK-| On servo-valve corresponding to wheels 1 and 4 : |
R      ||             | I1 = 8mA                                        |
R      ||             | I2 = 10mA                                       |
R      ||             | Ref. Chart 123.                                 |
R      ||              ------------------------------------------------
R      ||
R      OK
R      ||
R    ******************************************************
R    * Trip FWD OUTER WHEELS BRAKE CONT circuit breaker  *
R    * (G184) [6]. On servo-valves:                      *
R    * I1 = 2.7mA                                         *
R    * I2 = 0                                             *
R    ******************************************************
R      ||        |
R      ||        |       ------------------------------------------------
R      OK      NOT OK-| Replace brakes overload control unit [28].     |
R      ||              ------------------------------------------------
R      ||
R    ******************************************************
R    * Reset FWD OUTER WHEELS BRAKE CONT circuit breaker *
R    * (G184) [6].                                        *
R    * Repeat the two preceding tests on:                 *
R    * -servo-valves corresponding to wheels 2 and 3;    *
R    *  tripping FWD INNER WHEELS BRAKE CONT circuit      *
R    *  breaker (G182) [4].                               *
R    * -servo-valves corresponding to wheels 5 and 8;    *
R    *  tripping REAR OUTER WHEELS BRAKE CONT circuit     *
R    *  breaker (G183) [5].                               *
R    * -servo-valves corresponding to wheels 6 and 7;    *
R    *  tripping REAR INNER WHEELS BRAKE CONT circuit     *
R    *  breaker (G181) [3].                               *
R    ******************************************************
R      ||
R      ||
R      ||
R      ||
R      OK
R      ||
R      ||
R      ||
```

```
    ||
    OK
    ||
 *****************************************************
 * Disconnect strain sensor corresponding to wheel   *
 * No.1                                              *
 * On connector G220A apply 2mVDC between terminals  *
R * F (-) and E (+).                                  *
 * On brakes overload control unit in electronics    *
 * rack 9-215, galvanometer pointer deflects.        *
 *****************************************************
    ||      |
    ||      |  ----------------------------------------------------
    OK      NOT OK-| Replace brakes overload control unit [28].      |
    ||         ----------------------------------------------------
    ||
 *****************************************************
 * On brakes overload control unit, using rotary     *
 * selector, check drift of the eight strain         *
 * sensors (Tolerance ±450mV).                       *
 *****************************************************
    ||      |
    ||      |  ----------------------------------------------------
    OK      NOT OK-| Replace corresponding brake torque arm or       |
    ||             | permute strain sensors [29]                     |
    ||             | Check brake unit (Ref. 05-53-11).               |
    ||         ----------------------------------------------------
    ||
 *****************************************************
 * Trip NOSE UC WEIGHT SW "A" SYS SUP circuit brea-  *
 * ker (G291) [12] and LH UC WEIGHT SW "A" SYS SUP   *
 * circuit breaker (G292) [13].                      *
 * R lights on ANTI SKID test indicator illuminate.  *
 * Successively check on each servo-valve that I2 =  *
 * 16.5 ± 2mA                                        *
 *****************************************************
    ||      |
    ||      |  ----------------------------------------------------
    OK      NOT OK-| On servo-valve(s) where I = 0, check electrical |
    ||             | wiring between brakes overload control unit and |
    ||             | servo-valve(s) (WDM 34-43-03) or replace brakes |
    ||             | overload control unit [28].                     |
    ||         ----------------------------------------------------
    ||
    ||
```

```
  ||
  OK
  ||
*****************************************************
* On connector U7055 on tachometer generator (zone  *
* 733), starting from 0 volt, gradually apply a DC  *
* voltage (Ref. table below):                       *
* On servo-valve corresponding to wheel No.1, I2    *
* passes from 16.5mA to 0 for an applied voltage of *
* 8 to 10.5VDC.                                     *
* Corresponding R light extinguishes.               *
*****************************************************
  ||      |
  ||      |      -------------------------------------------
  OK      NOT OK-| Replace Anti-skid control unit [26]       |
  ||             -------------------------------------------
  ||
*****************************************************
* Decrease voltage applied to connector U7055 to 0  *
* volt. Reset NOSE UC WEIGHT SW "A" SYS SUP circuit *
* breaker (G291) [12] and LH UC WEIGHT SW "A" SYS   *
* SUP circuit breaker (G292) [13]. On nose gear     *
* tachometer generator connector G202A apply 10VDC. *
* On connector U7055 gradually apply voltage:       *
* On servo-valve, I2 passes from 16.5mA to 0 and
* corresponding R light extinguishes.               *
*****************************************************
  ||      |
  ||      |      -------------------------------------------
  OK      NOT OK-| Replace Anti-skid control unit [26].      |
  ||             -------------------------------------------
  ||
*****************************************************
* Perform the two tests above on the seven remaining*
* wheels referring to the following table.          *
*****************************************************
```

WHEEL	LH FWD		RH FWD		LH AFT		RH AFT	
	OUTER (1)	INNER (2)	INNER (3)	OUTER (4)	OUTER (5)	INNER (6)	INNER (7)	OUTER (8)
SERVO-VALVE	G197	G196	G204	G205	G198	G199	G207	G206
TACHO-METER GENERATOR	G193	G192	G208	G209	G194	G195	G211	G210
CONNECTOR	U7055	U7067	U7066	U7054	U7057	U7069	U7068	U7056
TER- +	A	B	A	B	A	B	A	B
MINAL -	B	A	B	A	B	A	B	A

OK

* On strain sensor connector G220A corresponding to wheel No.1. Connect resistance of 350Ω between terminals B and C.
R * Apply 17.246 ± 1mV between terminals F (-) and E
R (+) (forward torque arm).
* (For strain sensors on rear torque arms, apply 9.175 ±0.5mV).
* Depress Captain or F/O pedals until second load threshold (12°) is reached.
* On corresponding servo-valve :
* I1 = 12 ± 1mA, I2 =0.

OK

NOT OK- | Replace brakes overload control unit [28]

```
   ||
   OK
   ||
*****************************************************
* Hold brake pedals at second load threshold. In-   *
* crease applied voltage on strain sensor connector *
* to 23.390 ±2mV (forward torque arm), (12.245 ±1mV *
* on rear torque arms)                              *
* On corresponding servo-valve :                    *
* I1 = 12mA                                         *
* I2 = 10 ± 1mA                                     *
* On brakes overload control unit, corresponding    *
* magnetic indicator shows white                    *
* On Flight Engineer instrument panel 12-214,       *
* BRAKES OVERLOAD magnetic indicator shows white.   *
*****************************************************
   ||      |
   ||      |      -----------------------------------------------------
   OK      NOT OK-| Replace brakes overload control unit [28].        |
   ||             -----------------------------------------------------
   ||
*****************************************************
* Hold brake pedals at second load threshold.       *
* Place throttle control lever No.3 in max thrust   *
* position.                                         *
* On servo-valve : I1 = 12mA, I2 = 10 ± 1mA         *
*****************************************************
   ||      |
   ||      |      -----------------------------------------------------
   OK      NOT OK-| On servo-valve : I1 = 12mA, I2 = 0mA              |
   ||             | Ref. Chart 125                                    |
   ||             -----------------------------------------------------
   ||
*****************************************************
* Hold brake pedals at second load threshold.       *
* Place throttle control lever No.3 in flight idle  *
* position.                                         *
* Place throttle control lever No.2 in max. thrust  *
* position.                                         *
* On servo-valve : I1 = 12mA, I2 = 10mA             *
*****************************************************
   ||      |
   ||      |      -----------------------------------------------------
   OK      NOT OK-| On servo-valve : I1 = 12mA, I2 = 0mA              |
   ||             | Ref. Chart 126.                                   |
   ||             -----------------------------------------------------
```

OK

* Hold brake pedals at second load threshold.
* Place throttle control lever No.3 in maximum thrust position.
* On servo-valve :
* I1 = 12mA
* I2 = 0

OK

NOT OK - On servo-valve :
I1 = 12mA
I2 = 10mA
Ref. Chart 127.

* Perform the five checks above on the seven remaining strain sensors and their corresponding servo-valves, referring to the following table

	LH	FWD	RH	FWD	LH	AFT	RH	AFT
WHEEL	OUTER (1)	INNER (2)	INNER (3)	OUTER (4)	OUTER (5)	INNER (6)	INNER (7)	OUTER (8)
STRAIN SENSORS ON FWD BRAKE TORQUE ARMS	G220	G219	G223	G224				
STRAIN SENSORS ON AFT BRAKE TORQUE ARMS					G222	G221	G225	G226
SERVO-VALVES	G197	G196	G204	G205	G198	G199	G207	G206

```
  ||
*****************************************************
* Decrease to zero, the voltage applied to strain   *
* sensor connector.                                 *
* Remove ANTI SKID control unit (Ref. 32-43-31,     *
* Removal/Installation).                            *
* On connector G200A, between terminals 47(+) and   *
* 57(-), apply 3 ± 0.1VDC                           *
* On ANTI SKID test indicator, R light corresponding*
* to wheel No.1 illuminates.                        *
*****************************************************
  ||      |
  ||      |       ---------------------------------------------
  OK     NOT OK-|Replace Anti-skid test indicator [22]        |
  ||              ---------------------------------------------
  ||
*****************************************************
* Increase voltage applied to strain sensor         *
* connector to 8.80 ± 1.2mV (4.99 ± 0.6mV on rear   *
* torque arms).                                     *
* On servo-valve :                                  *
* I1 = 12mA                                         *
* I2 = 0                                            *
*****************************************************
  ||      |
  ||      |       ---------------------------------------------
  OK     NOT OK-| Replace brakes overload control unit [28]   |
  ||              ---------------------------------------------
  ||
*****************************************************
* Perform the two checks above on the remaining     *
* seven wheels, referring to the following table.   *
*****************************************************
  ||
  ||
```

||

	LH FWD				RH FWD				LH AFT				RH AFT			
WHEEL	OUTER (1)		INNER (2)		INNER (3)		OUTER (4)		OUTER (5)		INNER (6)		INNER (7)		OUTER (8)	
POLARITY	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
RACK CONNECTOR G200A TERMINALS.	47	57		57		57	25	57	39	57		57		57	23	57
RACK CONNECTOR G200B TERMINALS.			47		25						39		23			
SERVO-VALVE	G197		G196		G204		G205		G198		G199		G207		G206	
STRAIN SENSOR	G220		G219		G223		G224		G222		G221		G225		G226	

||
OK
||

```
*****************************************************
* Release brake pedals.                             *
* Connect strain sensor connector.                  *
* Install ANTI SKID control unit (Ref. 32-43-31,    *
* Removal/Installation).                            *
* On wheel No.1 servo-valve, open electrical control*
* circuit (I1):                                     *
* On wheel No.1 servo-valve I2 passes from 0 to 10mA*
*****************************************************
   ||       |
   ||       |     ---------------------------------------------
   OK       NOT OK-| Replace brakes overload control unit [28]  |
   ||             ---------------------------------------------
   ||
*****************************************************
* On wheel No.1 servo-valve, close then short -     *
* circuit electrical control circuit:               *
* On wheel No.1 servo-valve I2 passes from 0 to 10mA*
*****************************************************
   ||       |
   ||       |     ---------------------------------------------
   OK       NOT OK-| Replace brakes overload control unit [28]  |
   ||             ---------------------------------------------
```

OK

* Remove short-circuit from wheel No.1 servo-valve electrical control circuit.
* Disconnect wheel No.1 strain sensor.
* Check that I1 = 10mA and I2 passes from 0 to 10mA

OK

NOT OK - Replace brakes overload control unit [28]

* Perform the three checks above for the seven remaining wheels on corresponding strain sensors and servo-valves, referring to the following table

WHEEL	LH OUTER (1)	FWD INNER (2)	RH INNER (3)	FWD OUTER (4)	LH OUTER (5)	AFT INNER (6)	RH INNER (7)	AFT OUTER (8)
SERVO-VALVES	G197	G196	G204	G205	G198	G199	G207	G206
STRAIN SENSORS	G220	G219	G223	G224	G222	G221	G225	G226

OK

R *NOTE: Ensure that all strain sensors are connected.
*Trip NOSE UC WEIGHT SW "A" SYS SUP circuit breaker (G291) and LH UC WEIGHT SW "A" SYS SUP circuit breaker (G292). Depress Captain or F/O brake pedals until second load threshold is reached
R (12° approx). Trip WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP circuit breaker (G186) [8]
*On servo-valves corresponding to wheels 1 and 4
R I1 passes from 10 to 8 ± 0.8mA, I2 = 10mA.

OK

NOT OK - Replace brakes overload control unit [28].

```
   ||
   OK
   ||
*****************************************************
*Reset WHEELS 1 4 A/SKID & ADAPT AMPS SUP circuit   *
*breaker (G186) [8].  Hold pedals at second load    *
*threshold.  Trip WHEELS 2 3 A/SKID & ADAPT AMPS    *
*SUP circuit breaker (G187) [9].                    *
*On servo-valves corresponding to wheels 2 and 3,   *
*I1 passes from 10 to 8 ± 0.8mA, I2 = 10mA.         *
*****************************************************
   ||     |
   OK     NOT OK--| Replace brakes overload control unit [28]. |
   ||
*****************************************************
*Reset WHEELS 2 3 A/SKID & ADAPT AMPS SUP circuit   *
*breaker (G187) [9].  Hold pedals at second load    *
*threshold.  Trip WHEELS 5 8 A/SKID & ADAPT AMPS    *
*SUP circuit breaker (G185) [7].                    *
*On servo-valves corresponding to wheels 5 and 8,   *
*I1 passes from 10 to 8 ± 0.8mA, I2 = 10mA.         *
*****************************************************
   ||     |
   OK     NOT OK--| Replace brakes overload control unit [28]. |
   ||
*****************************************************
*Reset WHEELS 5 8 A/SKID & ADAPT AMPS SUP circuit   *
*breaker (G185) [7].  Hold pedals at second load    *
*threshold.  Trip WHEELS 6 7 A/SKID & ADAPT AMPS    *
*SUP circuit breaker (G188) [10].                   *
*On servo-valves corresponding to wheels 6 and 7,   *
*I1 passes from 10 to 8 ± 0.8mA, I2 = 10mA.         *
*****************************************************
   ||     |
   OK     NOT OK--| Replace brakes overload control unit [28]. |
   ||
*****************************************************
*After having tripped the circuit breakers listed   *
*in Prepare paragraph 2.D, connect servo-valves     *
*then reset the circuit breakers.                   *
*****************************************************
   ||
```

R

Continued on Page 127

R
R INTENTIONALLY BLANK
R

R
R
R

INTENTIONALLY BLANK

R

OK

```
***************************************************
*Remove debris guard and manually rotate tachometer*
*generator corresponding to wheel No.1 in reverse  *
*direction.  Corresponding R light illuminates.    *
***************************************************
```

OK   NOT OK — Replace tachometer generator [24].

```
***************************************************
*Perform the above test on the seven remaining     *
*tachometer generators.                            *
***************************************************
```

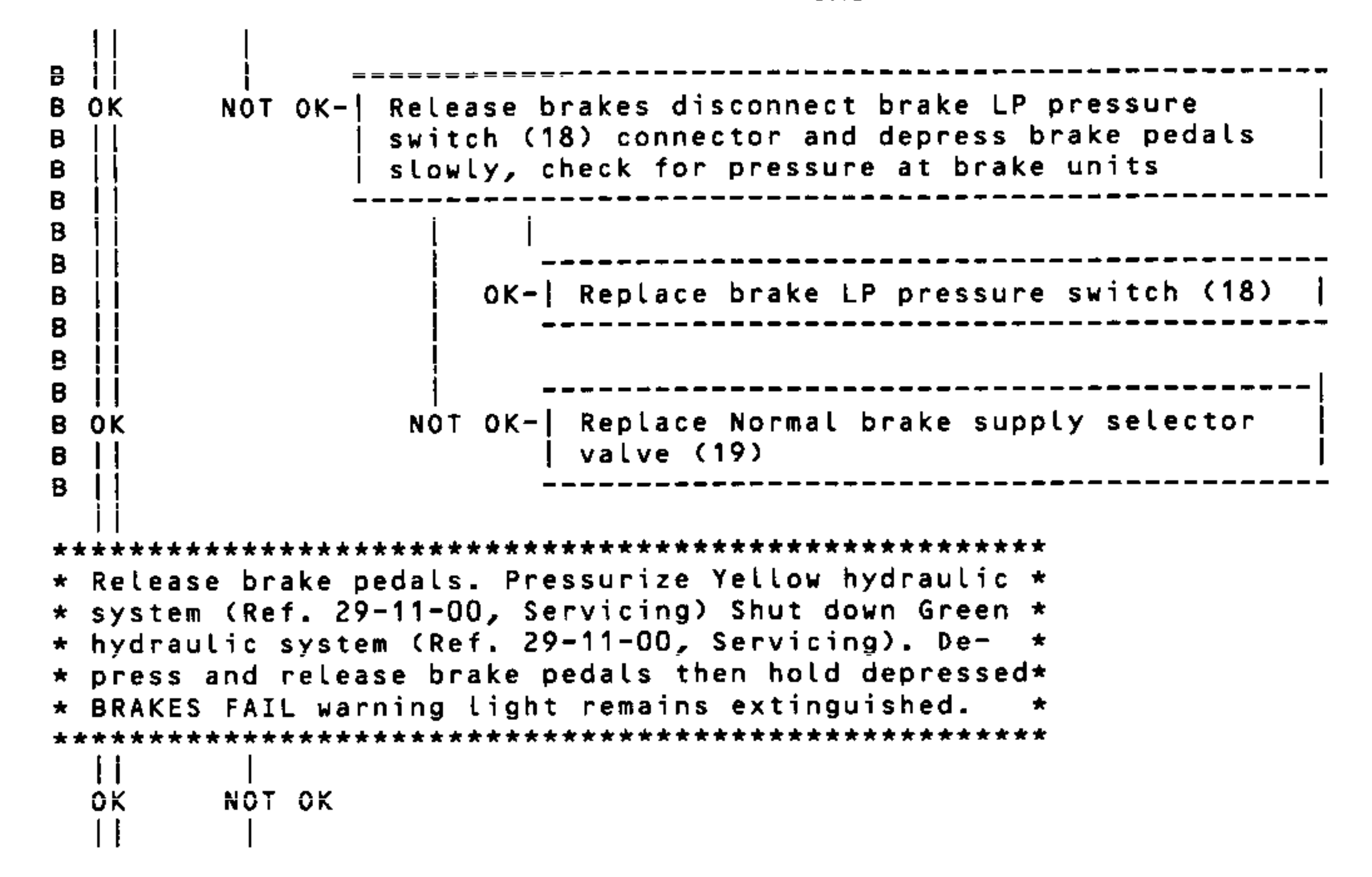
OK

```
***************************************************
*Depress Captain's or First Officer's brake pedals:*
*On centre instrument panel, BRAKES FAIL warning   *
*light illuminates.                                *
***************************************************
```

OK   NOT OK — BRAKES FAIL warning light remains extinguished. Ref. Chart 112.

```
***************************************************
*Release brake pedals.  Pressurize Green hydraulic *
*system (Ref. 29-11-00, Servicing).  Depress brake *
*pedals:  BRAKES FAIL warning light remains        *
*extinguished.                                     *
***************************************************
```

OK   NOT OK


B OK
NOT OK
Release brakes disconnect brake LP pressure switch (18) connector and depress brake pedals slowly, check for pressure at brake units
OK
Replace brake LP pressure switch (18)
B OK
NOT OK
Replace Normal brake supply selector valve (19)
Release brake pedals. Pressurize Yellow hydraulic system (Ref. 29-11-00, Servicing) Shut down Green hydraulic system (Ref. 29-11-00, Servicing). Depress and release brake pedals then hold depressed BRAKES FAIL warning light remains extinguished.
OK
NOT OK

```
  ||       |
  ||       |      -----------------------------------------------
  OK     NOT OK-| Replace Normal braking supply selector valve [19]|
  ||              -----------------------------------------------
  ||
*******************************************************
* Trip WHEEL BRAKE "B" SYS CONT circuit breaker       *
* (G132) [2].                                         *
* Depress brake pedals:                               *
* BRAKES FAIL warning light remains extinguished.     *
*******************************************************
  ||       |
  ||       |      -----------------------------------------------
  OK     NOT OK-| Replace Normal braking supply selector valve [19]|
  ||              -----------------------------------------------
  ||
*******************************************************
* Reset circuit breaker WHEEL BRAKE "B" SYS CONT      *
* (G132) [2].                                         *
* Trip circuit breaker WHEEL BRAKE "A" SYS CONT       *
* O/LOAD IND (G131) [1].                              *
* Depress brake pedals: All brakes are pressurized    *
* (pressure gauges).                                  *
*******************************************************
  ||       |
  ||       |      -----------------------------------------------
  OK     NOT OK-| Brakes are not pressurized:                      |
  ||       |    | Replace Normal braking supply selector valve [19]|
  ||       |      -----------------------------------------------
  ||       |
  ||       |      -----------------------------------------------
  OK     NOT OK-| One of the brakes is not pressurized.            |
  ||            | Replace servo-valve [25] on brake concerned.     |
  ||              -----------------------------------------------
  ||
*******************************************************
* Reset WHEEL BRAKE "A" SYS CONT O/LOAD IND circuit   *
* breaker (G131) [1].                                 *
* Using measuring equipment E92013000 check pedal     *
* travel before detection of pressure.                *
* Pedal travel is between 2 and 4°.                   *
*******************************************************
  ||       |
  ||       |      -----------------------------------------------
  OK     NOT OK-| Adjust brake pedal transmitter [23]              |
  ||              -----------------------------------------------
```

```
  ||
  OK
  ||
*****************************************************
* Perform load checks on each pedal (Ref. 32-43-00, *
* Adjustment Test, Paragraph 4.O)                   *
*****************************************************
  ||      |
  ||      |      ---------------------------------------------
  OK      NOT OK-| Replace master cylinder [40].              |
  ||             ---------------------------------------------
  ||
*****************************************************
* NOTE: Braking system is still supplied by Yellow  *
*       hydraulic system (Ref. 32-43-00, Adjustment *
*       Test, Paragraph 4.P).                       *
* Trip NOSE UC WEIGHT SW "A" SYS SUP circuit breaker*
* (G291) [12] and LH UC WEIGHT SW "A" SYS SUP cir-  *
* cuit breaker (G292) [13]. Place landing gear Nor- *
* mal control lever in UP position (press O/RIDE    *
* PRESS push-button) :                              *
* Pressure delivered to each brake is 160 bars      *
* (2321 psi).                                       *
*****************************************************
  ||      |
  ||      |      ---------------------------------------------
  OK      NOT OK-| At the eight brake units, pressure is zero : |
  ||      |      | Ref. Chart 128                               |
  ||      |      ---------------------------------------------
  ||      |
  ||      |      ---------------------------------------------
  OK      NOT OK-| On two symmetrical wheels, pressure is zero : |
  ||             | Replace brake pedal transmitter [23].         |
  ||             ---------------------------------------------
  ||
*****************************************************
* Trip LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP cir-  *
* cuit breaker (G293) [16].                         *
* On brake units, pressure is zero                  *
*****************************************************
  ||      |
  ||      |      ---------------------------------------------
  OK      NOT OK-| On the eight brake units, pressure is maintained:|
  ||             | Replace relay G326 [32].                         |
  ||             ---------------------------------------------
  ||
  ||
```

```
  ||
  OK
  ||
*****************************************************
* Place landing gear Normal control lever in DOWN   *
* position. (Restore O/RIDE to initial condition).  *
* Reset circuit breakers NOSE UC WEIGHT SW "A" SYS  *
* SUP (G291) [12] and LH UC WEIGHT SW "A" SYS SUP   *
* (G292) [13] and LH UC WEIGHT SW & DOWNLOCK "B" SYS*
* SUP (G293) [16].                                  *
* On connector G338, connect decade box between     *
* terminals A and B (Ref. 32-43-00, Adjustment/Test,*
* Paragraph 4.Q) Set to 140Ω :                      *
* On Flight Engineer instrument panel, temperature  *
* indicator on BRAKES TEMP indicator reads 100°C    *
*****************************************************
  ||      |
  ||      |    ---------------------------------------------------
  OK      NOT OK-| Temperature indicator reads temperature other |
  ||             | than 100°C.                                   |
  ||             | Ref. Chart 129                                |
  ||             ---------------------------------------------------
  ||
*****************************************************
* On decade box, gradually increase resistance until*
* WHEELS O/HEAT warning light illuminates.          *
* Resistance is 177 ± 5Ω                            *
*****************************************************
  ||      |
  ||      |    ---------------------------------------------------
  OK      NOT OK-| When resistance is 177 ± 5Ω, warning light does |
  ||             | not illuminate. Ref. Chart 130                  |
  ||             ---------------------------------------------------
  ||
*****************************************************
* Successively press the seven other warning lights *
* on BRAKES TEMP indicator: Temperature indicator   *
* reads temperature of brake unit corresponding to  *
* warning light pressed.                            *
*****************************************************
          |
          |    ---------------------------------------------------
          NOT OK-| Temperature indicator reads temperature of wheel |
                 | No.1 brake unit whichever warning light is       |
                 | pressed:                                         |
                 | Replace BRAKES TEMP indicator [36].              |
                 ---------------------------------------------------
```

```
*************************************
* THE 8 R LIGHTS ON ANTI SKID TEST  *
* INDICATOR REMAIN EXTINGUISHED.    *
*************************************


   *****************************************************
   * Check WHEEL BRAKES TEST IND & SUP circuit breaker *
RB * (G9001) [38A].                                    *
   *****************************************************
        |      |
        |      NOT OK---| Replace WHEEL BRAKES TEST IND & SUP circuit |
RB      OK              | breaker (G9001) [38A].                      |
        |
        |---------------| Replace brake ANTI SKID test indicator [22]. |
```


Chart 101

```
**************************************
* THE 8 WARNING LIGHTS ON BRAKES     *
* TEMP INDICATOR REMAIN EXTINGUISHED *
**************************************


************************************************
* Check WHEELS O/HEAT IND circuit breaker      *
* (G335)                                       *
************************************************
     |      |
     |      |      --------------------------------------------------
    OK     NOT OK-| Replace WHEELS O/HEAT IND circuit breaker        |
     |             | (G335) [15].                                     |
     |             --------------------------------------------------
     |
     |             --------------------------------------------------
     -------------| Replace BRAKES TEMP indicator [36].              |
                   --------------------------------------------------
```

Chart 102

```
**************************************
* DURING ANTI SKID TEST, THE 8 R     *
* LIGHTS ON ANTI SKID INDICATOR      *
* REMAIN EXTINGUISHED.               *
**************************************


************************************************
* On nosewheel tachometer generator connector  *
* G203A, TEST1/TEST2 switch on ANTI SKID test  *
* indicator in TEST1 position, voltage between *
* terminals A and C is greater than 23 volts.  *
************************************************
      |      |
      |      |    --------------------------------------------------
     OK     NOT OK-| Replace ANTI SKID test indicator [22].         |
      |           --------------------------------------------------
      |
      |           --------------------------------------------------
      ------------| Replace nosewheel tachometer generator [27].    |
                  --------------------------------------------------
```

Chart 103

* DURING ANTI SKID TEST, ONE OR MORE R LIGHTS ON ANTI SKID INDICATOR REMAIN EXTINGUISHED

* On connector G200A or G200B, apply 3.1VDC between positive and negative terminals (Ref. following table): R light corresponding to wheel concerned illuminates.

OK — Replace anti-skid control unit [26]

NOT OK — Replace ANTI-SKID test indicator [22]

WHEEL	LH FWD				RH FWD				LH AFT				RH AFT			
	OUTER (1)		INNER (2)		INNER (3)		OUTER (4)		OUTER (5)		INNER (6)		INNER (7)		OUTER (8)	
POLARITY	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
RACK CONNECTOR G 200A TERMINALS	47	57		57		57	25	57	39	57		57		57	23	57
RACK CONNECTOR G 200B TERMINALS			47		25						39		23			

Chart 104

```
****************************************
* DURING ANTI-SKID TEST, TWO R LIGHTS*
* ON ANTI-SKID INDICATOR, CORRES-    *
* PONDING TO TWO SYMMETRICAL WHEELS  *
* DO NOT ILLUMINATE                  *
****************************************

****************************************************
* Check circuit breaker corresponding to two       *
* symmetrical wheels referring to table below.     *
****************************************************
    |       |
    |       |      -----------------------------------------
   OK     NOT OK-| Replace faulty circuit breaker          |
    |              -----------------------------------------
    |
    |              -----------------------------------------
    -------------| Replace ANTI-SKID test indicator [22]   |
                   -----------------------------------------
```

WHEEL	FWD OUTER LH (1)	FWD OUTER LH (4)	FWD INNER LH (2)	FWD INNER RH (3)	AFT OUTER LH (5)	AFT OUTER RH (8)	AFT INNER LH (6)	AFT INNER RH (7)
CIRCUIT BREAKER	G186 [8]		G187 [9]		G185 [7]		G188 [10]	

R

Chart 105

```
**************************************-------------------------------
* BRAKES OVERLOAD MAGNETIC INDICATOR *| GROUND EQUIPMENT REQUIRED   |
* REMAINS BLACK                      *|-----------------------------|
**************************************| DESCRIPTION       PART NO.  |
                                      |-----------------------------|
                                      | MULTIMETER                  |
                                      -------------------------------

*****************************************************
* In electronics rack 9-215, remove brakes overload *
* control unit (Ref. 32-43-57, Removal/Installation)*
* Apply 28VDC between positive terminal B38 and     *
* negative terminal B 53 on connector G218B:        *
* BRAKES OVERLOAD magnetic indicator shows white    *
*****************************************************
   |      |
   |      |      ---------------------------------------------------
   OK     NOT OK-| Replace BRAKES OVERLOAD magnetic indicator [30] |
   |             ---------------------------------------------------
   |
*****************************************************
* Check voltage between terminal 53 and ground on   *
* connector G218A:                                  *
* Voltage = 28VDC                                   *
*****************************************************
   |      |
   |      |      ---------------------------------------------------
   OK     NOT OK-| Replace circuit breaker G131 [1]                |
   |             | Install brakes overload control unit            |
   |             | (Ref. 32-43-57, Removal/Installation).          |
   |             ---------------------------------------------------
   |
   |             ---------------------------------------------------
   --------------| Replace brakes overload control unit [28].      |
                 ---------------------------------------------------
```

Chart 106

```
*************************************--------------------------------
* BRAKES OVERLOAD MAGNETIC INDICATOR *| GROUND EQUIPMENT REQUIRED    |
* REMAINS WHITE                      *|------------------------------|
**************************************| DESCRIPTION       PART NO.   |
                                      |------------------------------|
                                      | MULTIMETER                   |
                                      --------------------------------

*****************************************************
* In electronics rack 9-215, remove brakes overload *
* control unit (Ref. 32-43-57, Removal/Installation)*
* On connector G218B, apply 28VDC between terminals *
* 20(+) and 30(-)                                   *
* BRAKES OVERLOAD magnetic indicator shows black.   *
*****************************************************
    |      |
    |      |      ------------------------------------------------------
   OK     NOT OK-| Replace BRAKES OVERLOAD magnetic indicator [30]    |
    |            | Install brakes overload control unit                |
    |            | (Ref. 32-43-57, Removal/Installation).              |
    |             ------------------------------------------------------
    |
    |             ------------------------------------------------------
     ------------| Replace brakes overload control unit [28].          |
                  ------------------------------------------------------
```

Chart 107

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```
****************************************-------------------------------
* THE EIGHT WARNING LIGHTS ON BRAKES *| GROUND EQUIPMENT REQUIRED   |
* TEMP INDICATOR REMAIN EXTINGUISHED.*|-----------------------------|
* TEMPERATURE INDICATOR INDICATES    *| DESCRIPTION        PART NO. |
* ZERO. ON F/O INSTRUMENT PANEL,     *|-----------------------------|
* WHEELS O/HEAT WARNING LIGHT REMAINS*| MULTIMETER                  |
* EXTINGUISHED.                      *-------------------------------
****************************************

*******************************************************
* In electronics rack 2-215, remove wheel overheat    *
* indicating amplifier (Ref. 32-43-51, Removal/       *
* Installation). On connector G336A, check voltage    *
* between terminals 39 and 38.                        *
* Voltage = 115v 400Hz                                *
*******************************************************
    |       |
    |       |      ----------------------------------------------
   OK     NOT OK-| Check circuit breaker WHEEL O/HEAT DETECT SUP |
    |             | (G334) [14].                                 |
    |              ----------------------------------------------
    |
    |              ----------------------------------------------
    -------------| Replace wheel overheat indicating amplifier [35].|
                   ----------------------------------------------
```

Chart 108

```
*****************************************=============================
* ON F/O INSTRUMENT PANEL, WHEELS      *| GROUND EQUIPMENT REQUIRED  |
* O/HEAT WARNING LIGHT REMAINS         *|----------------------------|
* EXTINGUISHED                         *| DESCRIPTION      PART NO.  |
****************************************|----------------------------|
                                        | MULTIMETER                 |
                                        ------------------------------

*****************************************************
* On Flight Engineer panel, remove BRAKES TEMP      *
* indicator (Ref. 32-43-53, Removal/Installation)   *
* On connector G341A, apply 28VDC between terminals *
* b(+) and S(-).                                    *
* WHEELS O/HEAT warning light illuminates.          *
*****************************************************
    |        |
    |        |      ---------------------------------------------
   OK      NOT OK-| Replace WHEELS O/HEAT warning light [37].   |
    |             | Install BRAKES TEMP indicator (Ref. 32-43-53,|
    |             | Removal/Installation).                      |
    |             ---------------------------------------------
    |
    |             ---------------------------------------------
    =============| Replace BRAKES TEMP indicator [36].          |
                  ---------------------------------------------
```

Chart 109

```
*************************************-------------------------------
* ON BRAKES TEMP INDICATOR, THE FOUR *| GROUND EQUIPMENT REQUIRED   |
* WARNING LIGHTS CORRESPONDING TO THE*|-----------------------------|
* RH OR LH LANDING GEAR, REMAIN      *| DESCRIPTION       PART NO.  |
* EXTINGUISHED                       *|-----------------------------|
**************************************| MULTIMETER                  |
                                      -------------------------------

*****************************************************
* On Flight Engineer panel, remove BRAKES TEMP      *
* indicator (Ref. 32-43-53, Removal/Installation).  *
* On connector G341A, shunt terminals E and N       *
* Check voltage between terminals A(+) and S(-).    *
* Voltage = 3.5VDC.                                 *
*****************************************************
    |       |
    |       |     ------------------------------------------
   OK     NOT OK-| Replace BRAKES TEMP indicator [36].      |
    |             ------------------------------------------
    |
    |             ------------------------------------------
    -------------| Replace wheel overheat indicating amplifier [35] |
                 | Install BRAKES TEMP indicator (Ref. 32-43-53,    |
                 | Removal/Installation).                           |
                  ------------------------------------------
```

Chart 110

```
****************************************-------------------------------
* ONE WARNING LIGHT ON BRAKES TEMP     *| GROUND EQUIPMENT REQUIRED    |
* INDICATOR REMAINS EXTINGUISHED.      *|------------------------------|
****************************************| DESCRIPTION        PART NO.  |
                                        |------------------------------|
                                        | MULTIMETER                   |
                                        --------------------------------

*******************************************************
* Remove BRAKES TEMP indicator (Ref. 32-43-53,        *
* Removal/Installation).                              *
* Shunt terminals E and N on connector G341A.         *
* (For forward outer LH wheel (1) check voltage       *
* between terminals X and N). (For remaining wheels   *
* Ref. Following table).                              *
* Voltage is less than 29 volts                       *
*******************************************************
     |      |
     |      |      ------------------------------------------------
    OK     NOT OK-| Replace BRAKES TEMP indicator [36].            |
     |             ------------------------------------------------
     |
*******************************************************
* Install BRAKES TEMP indicator (Ref. 32-43-53,       *
* Removal/Installation).                              *
* Remove wheel overheat indicating amplifier          *
* (Ref. 32-43-51. Removal/Installation).              *
* On connector G336A, measure resistance between      *
* terminals 9 and 3 (forward outer LH wheel (1)).     *
* Resistance is less than 100Ω.                       *
*******************************************************
     |      |
     |      |      ------------------------------------------------
    OK     NOT OK-| Replace wheel overheat indicating amplifier [35] |
     |             ------------------------------------------------
     |
     |             ------------------------------------------------
     -------------| Replace brake unit temperature sensor G338 [38] |
                  | on forward outer LH wheel.                       |
                  | Install wheel overheat indicating amplifier      |
                  | (Ref. 32-43-51, Removal/Installation).           |
                   ------------------------------------------------
```

Chart 111 (Sheet 1 of 2)

	WHEEL	SENSOR	G336A		G341A	
	FWD OUTER LH (1)	G338	9	3	X	N
	FWD INNER LH (2)	G337	2	3	V	N
	FWD INNER RH (3)	G342	5	4	C	N
R	FWD OUTER RH (4)	G343	13	4	A	N
	AFT OUTER LH (5)	G340	8	3	W	N
	AFT INNER LH (6)	G339	1	3	E	N
	AFT INNER RH (7)	G344	6	4	D	N
	AFT OUTER RH (8)	G345	12	4	B	N

Chart 111 (Sheet 2 of 2)

```
****************************************-------------------------------
* BRAKES FAIL WARNING LIGHT REMAINS    *| GROUND EQUIPMENT REQUIRED    |
* EXTINGUISHED.                        *|------------------------------|
****************************************| DESCRIPTION        PART NO.  |
                                        |------------------------------|
                                        | MULTIMETER                   |
                                        --------------------------------

*******************************************************
* Depress brake pedals. On connector UT 1837-4        *
* (access door 123AB, panel 2-123), between terminal*
* C and ground, voltage = 28VDC                       *
*******************************************************
     |      |
     |      |    ------------------------------------------------
   Ovolt  28V----| Depress brake pedals. On BRAKES FAIL warning  |
     |           | light (centre panel), voltage = 28VDC between |
     |           | terminal No.2 and ground                      |
     |           ------------------------------------------------
     |                |      |       ---------------------------
     |               28V   Ovolt---| Replace relay G138 [20]   |
     |                |              ---------------------------
     |                |              ---------------------------
     |                ---------------| Replace BRAKES FAIL warning |
     |                               | light [17]                  |
     |                               ---------------------------
     |
*******************************************************
* Depress brake pedals. On Normal braking supply se-*
* lector valve G137A [19] electrical connector,       *
* between terminals D and F, voltage = 28VDC          *
*******************************************************
     |      |
     |      |    ------------------------------------------------
   Ovolt  28V----| Replace Normal brake LP pressure switch [18]. |
     |           ------------------------------------------------
     |
*******************************************************
* Check WHEEL BRAKE "A" SYS CONT O/LOAD IND circuit *
* breaker (G131) [1].                                 *
*******************************************************
     |      |
     |      |    ------------------------------------------------
    OK    NOT OK-| Replace circuit breaker [1]                   |
     |           ------------------------------------------------
     |           ------------------------------------------------
     ------------| Replace Emergency Parking brake unit switch   |
                 | assembly [21].                                |
                 ------------------------------------------------
```

Chart 112

```
**************************************======================------------
* WITH WHEEL BRAKE "B" SYS CONT CIR- *| GROUND EQUIPMENT REQUIRED     |
* CUIT BREAKER (G132) TRIPPED, BRAKES*--------------------------------|
* FAIL WARNING LIGHT REMAINS         *| DESCRIPTION          PART NO. |
* EXTINGUISHED.                      *|-------------------------------|
**************************************| MULTIMETER                    |
                                       --------------------------------

****************************************************
* Remove brakes overload control unit (Ref. 32-43-57*
* Removal/Installation).                           *
* Depress RH brake pedal.                          *
* On connector G218A, between terminal 50 and ground*
* voltage = 28VDC.                                 *
****************************************************
   |      |
   |      |       ---------------------------------------------------
  OK     NOT OK-| Install brakes overload control unit              |
   |             | (Ref. 32-43-57, Removal/Installation).            |
   |             | Replace brake pedal transmitter [23].             |
   |              ---------------------------------------------------
   |
   |              ---------------------------------------------------
   -------------| Replace brakes overload control unit [28].        |
                  ---------------------------------------------------
```

Chart 113

```
*************************************-----------------------------
* VOLTMETER READS 0 VOLT            *| GROUND EQUIPMENT REQUIRED |
*************************************|---------------------------|
                                     | DESCRIPTION      PART NO. |
                                     |---------------------------|
                                     | MULTIMETER                |
                                     -----------------------------

*****************************************************
* Remove brakes overload control unit (Ref. 32-43-57*
* Removal/Installation).                            *
* Depress RH brake pedal. On connector G218B,       *
* between terminal 50 and ground voltage is :       *
*****************************************************
     |      |
     |      |    ---------------------------------------------
   0volt   28V---| Replace brakes overload control unit [28]. |
     |           ---------------------------------------------
     |
*****************************************************
* Install brakes overload control unit (Ref.        *
* 32-43-57, Removal/Installation) remove brake pedal*
* transmitter (Ref. 32-43-32, Removal/Installation) *
* On connector G191A, between terminal U and ground,*
* voltage = 28VDC.                                  *
*****************************************************
     |      |
     |      |    ---------------------------------------------
   0volt   28V---| Replace brake pedal transmitter [23].      |
     |           ---------------------------------------------
     |
*****************************************************
* Install brake pedal transmitter (Ref. 32-43-32,   *
* Removal/Installation).                            *
* Check WHEEL BRAKE "B" SYS CONT circuit breaker    *
* G132 [2].                                         *
*****************************************************
     |      |
     |      |    ---------------------------------------------
    OK   NOT OK-| Replace WHEEL BRAKE "B" SYS CONT circuit breaker |
     |          | (G132) [2].                                      |
     |           ---------------------------------------------
     |
     |           ---------------------------------------------
     ------------| Replace Emergency Parking brake unit switch |
                 | assembly [21]                               |
                 ---------------------------------------------
```

Chart 114

```
**************************************-----------------------------
* THE 8 LIGHTS ON ANTI SKID TEST      * | GROUND EQUIPMENT REQUIRED  |
* INDICATOR REMAIN EXTINGUISHED       * |-----------------------------|
************************************** | DESCRIPTION       PART NO.  |
                                        |-----------------------------|
                                        | MULTIMETER                  |
                                        -----------------------------

*****************************************************
* Remove anti-skid control unit (Ref. 32-43-31,     *
* Removal/installation).                            *
* On connector G200A, continuity between terminal 24*
* and ground.                                       *
*****************************************************
   |        |
   |        |     ****************************************************
   |        |     * On connector G200B, continuity between terminals *
R OK     NOTOK -- * 56 and 57                                        *
   |              ****************************************************
   |                 |     |
   |                 |     |     ---------------------------------------
   |                OK   NOT OK-| Replace anti-skid control unit  26   |
   |                 |           ---------------------------------------
   |                 |
   |                 |    ----------------------------------------------
   |                 ---| Replace LH main landing gear relay G304  34 . |
   |                    | Install anti-skid control unit (Ref. 32-43-31,|
   |                    | Removal/Installation).                        |
   |                     ----------------------------------------------
   |
------------------------------------------------------
| Replace Nose landing gear relay G297  33  .         |
| Install anti-skid control unit (Ref. 32-43-31,      |
| Removal/Installation).                              |
------------------------------------------------------
RB        |
RB        |      ======================================================
RB        |     |On relay (G297) base continuity between terminal      |
RB    NOT OK--|X2 and ground, if NOT OK replace switch G320          |
RB              |(Ref. 32-61-00 Trouble-Shooting chart 131)            |
RB               ------------------------------------------------------
```

CHART 115

```
**************************************------------------------------
* R LIGHTS ON ANTI SKID TEST INDI-    *| GROUND EQUIPMENT REQUIRED   |
* CATOR EXTINGUISH THEN ILLUMINATE    *|-----------------------------|
**************************************| DESCRIPTION        PART NO. |
                                      |-----------------------------|
                                      | MULTIMETER                  |
                                      -------------------------------

*****************************************************
* Remove anti-skid control unit (Ref. 32-43-31,     *
* Removal/Installation). On connector G200B,        *
* continuity between terminals 56 and 57            *
*****************************************************
    |      |
    |      |     ------------------------------------------------
   OK     NOT OK-| Replace LH main landing gear relay G304 [34].  |
    |            ------------------------------------------------
    |
    |            ------------------------------------------------
    -------------| Replace anti-skid control unit [26].           |
                 ------------------------------------------------
```

Chart 116

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R
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R

```
****************************************
*ON SERVO-VALVES CORRESPONDING TO      *
*WHEELS 1 AND 4:                       *
*I1 = 2.7mA                            *
*I2 = 0                                *
****************************************

*****************************************************
*Check FWD OUTER WHEELS BRAKE CONT circuit breaker *
*(G184)[6]                                          *
*(For remaining wheels, refer to following table). *
*****************************************************
```

- OK — Replace brake pedal transmitter [23].
- NOT OK — Replace FWD OUTER WHEELS BRAKE CONT circuit breaker (G184) [6]. (For remaining wheels, refer to following table).

WHEELS	FWD OUTER LH and RH (1) (4)	FWD INNER LH and RH (2) (3)	AFT OUTER LH and RH (5) (8)	AFT INNER LH and RH (6) (7)
CIRCUIT BREAKER	G184 [6]	G182 [4]	G183 [5]	G181 [3]

Chart 117

* ON SERVO-VALVES CORRESPONDING TO WHEELS 1 OR 4:
* I1 = 2.7mA
* I2 = 0

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	

* Remove brakes overload control unit (Ref. 32-43-57 Removal/Installation).
* On connector G218B, connect ammeter between terminals as per following table, depending on suspect servovalve
* Current = 10mA

NOT OK - Replace brake pedal transmitter [23]. Install brakes overload control unit (Ref. 32-43-57, Removal/Installation).

OK - Replace brakes overload control unit [28].

WHEELS	SERVOVALVES	G218 B		G218 A	
FWD OUTER LH (1)	G197	41	3		
FWD INNER LH (2)	G196			41	3
FWD INNER RH (3)	G204			40	2
FWD OUTER RH (4)	G205	40	2		
AFT OUTER LH (5)	G198	43	11		
AFT INNER LH (6)	G199			43	11
AFT INNER RH (7)	G207			42	4
AFT OUTER RH (8)	G206	42	4		

Chart 118

```
****************************************-------------------------------
* ON SERVO-VALVES CORRESPONDING TO     *| GROUND EQUIPMENT REQUIRED   |
* WHEELS 1 OR 4:                       *|-----------------------------|
* I1 = 10mA                            *| DESCRIPTION       PART NO.  |
* I2 = 10mA                            *|-----------------------------|
****************************************| MULTIMETER                  |
                                        -------------------------------

******************************************************
* On strain sensor electrical connector correspon-   *
* ding to suspect wheel, measure strain sensor       *
* resistance between terminals B and C, E and F      *
* Resistance = 350Ω                                  *
* CAUTION : MAX AUTHORIZED CURRENT APPLICABLE TO     *
*           STRAIN SENSOR IS 50mA.                   *
******************************************************
    |      |
    |      |      -----------------------------------------------
   OK     NOT OK-| Replace brake torque arm or permute strain   |
    |            | sensors [29]                                 |
    |            | Check brake unit (Ref. 05-53-11)             |
    |             -----------------------------------------------
    |
    |             -----------------------------------------------
    -------------| Replace brakes overload control unit [28].   |
                  -----------------------------------------------
```

Chart 119

```
**************************************
* ON SERVO-VALVES CORRESPONDING TO   *
* WHEELS 1 AND 4:                    *
* I1 = 8mA                           *
* I2 = 10mA                          *
**************************************


*****************************************************
* On ANTI-SKID test indicator on F/O instrument     *
* panel, perform test No.1                          *
* Warning lights corresponding to wheels 1 and 4    *
* illuminate.                                       *
*****************************************************
   |      |
   |      |      ---------------------------------------------------
  OK     NOT OK-| Replace circuit breaker (G188) WHEELS 14 A/SKID  |
   |            | 67 ADAPT AMPS SUP [10].                          |
   |             ---------------------------------------------------
   |
*****************************************************
* Warning lights corresponding to wheels 6 and 7    *
* illuminate                                        *
*****************************************************
   |      |
   |      |      ---------------------------------------------------
  OK     NOT OK-| Replace circuit breaker (G186) WHEELS 67 A/SKID  |
   |            | 14 ADAPT AMPS SUP [8].                           |
   |             ---------------------------------------------------
   |
   |             ---------------------------------------------------
   -------------| Replace brakes overload control unit [28].       |
                 ---------------------------------------------------
```

<u>NOTE</u>: For symmetrical wheels 6 and 7, trouble shooting procedure is identical.
For symmetrical wheels 2,3 and 5,8, replace the following circuit breakers.
For wheels 2 and 3, replace circuit breaker WHEELS 23 A/SKID 58 ADAPT AMPS SUP (G185) [7].
For wheels 5 and 8, replace circuit breaker WHEELS 58 A/SKID 23 ADAPT AMPS SUP (G187) [9].

Chart 123

```
*************************************-------------------------------
* ON SERVO-VALVE:                    *| GROUND EQUIPMENT REQUIRED   |
* I1 = 12mA                          *|-----------------------------|
* I2 = 0                             *| DESCRIPTION        PART NO. |
*************************************|-----------------------------|
                                      | MULTIMETER                  |
                                      -------------------------------

*****************************************************
* Remove brakes overload control unit (Ref. 32-43-57*
* Removal/Installation).                            *
* Check continuity between terminals 48 and 52 on   *
* connector G218A.                                  *
*****************************************************
   |      |
   |      |     --------------------------------------------------
  OK     NOT OK-| Replace brakes overload control unit [28]      |
   |            --------------------------------------------------
   |
   |            --------------------------------------------------
   -------------| Replace microswith box 2K1548 [41].             |
                | Install brakes overload control unit (Ref.     |
                | 32-43-57, Removal/Installation).               |
                --------------------------------------------------
```

Chart 125

```
**************************************--------------------------------
* ON SERVO-VALVE:                    *| GROUND EQUIPMENT REQUIRED    |
* I1 = 12mA                          *|------------------------------|
* I2 = 0                             *| DESCRIPTION         PART NO. |
**************************************|------------------------------|
                                      | MULTIMETER                   |
                                       -------------------------------

*******************************************************
* Remove brakes overload control unit (Ref.           *
* 32-43-57, Removal/Installation). On connector       *
* G218B, continuity between terminals 48 and 52.      *
*******************************************************
    |        |
    |        |      -------------------------------------------------
   OK      NOT OK-| Replace brakes overload control unit [28].      |
    |               -------------------------------------------------
    |
    |               -------------------------------------------------
    -------------| Replace microswith box 3K1548 [41]               |
                  | Install brakes overload control unit (Ref.       |
                  | 32-43-57, Removal/Installation.).                |
                   -------------------------------------------------
```

Chart 126

```
*****************************************
*                                       *
* ON SERVO-VALVES CORRESPONDING TO      *
* WHEELS 1 and 4 :                      *
* I1 = 8mA                              *
* I2 = 10mA                             *
*                                       *
*****************************************

*******************************************************
*                                                     *
* On ANTI-SKID test indicator on F/O instrument       *
* panel, perform test No. 1.                          *
* Warning lights corresponding to wheels 1 and 4      *
* illuminate.                                         *
*                                                     *
*******************************************************
    |       |
    OK      NOT OK ---- Check circuit breaker (G186) WHEELS 1 & 4
    |                   A/SKID & ADAPT AMPS SUP [8]. Replace if
    |                   necessary
    |
    |                   Replace Anti-skid control unit G200 [26]. If
    |------------------ still incorrect, replace Brakes overload
                        Control unit (G218) [28].
```

NOTE : For symmetrical wheels 6 and 7, trouble shooting procedure is identical.
For symmetrical wheels 2, 3 and 5, 8, trouble shooting procedure is identical.
For wheels 2 and 3, see circuit breaker WHEELS 2 & 3 A/SKID & ADAPT AMPS SUP (G187) [9].
For wheels 5 and 8, see circuit breaker WHEELS 5 & 8 A/SKID & ADAPT AMPS SUP (G185) [7].
For wheels 6 and 7, see circuit breaker WHEELS 6 & 7 A/SKID & ADAPT AMPS SUP (G188) [10].

Chart 123

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```
**************************************-------------------------------
* ON SERVO-VALVE:                    *| GROUND EQUIPMENT REQUIRED    |
* I1 = 12mA                          *|------------------------------|
* I2 = 10mA                          *| DESCRIPTION        PART NO.  |
**************************************|------------------------------|
                                      | MULTIMETER                   |
                                      --------------------------------

*****************************************************
* Remove brakes overload control unit (Ref.         *
* 32-43-57, Removal/Installation). On connector     *
* G218A, continuity between terminals 48 and 52     *
*****************************************************
    |      |
    |      |       -----------------------------------------------
   OK     NOT OK-| Replace microswitch box 2K1548 [41].          |
    |            | Install brakes overload control unit (Ref.    |
    |            | 32-43-57, Removal/Installation)               |
    |             -----------------------------------------------
    |
*****************************************************
* On connector G218B, continuity between terminals  *
* 48 and 52                                         *
*****************************************************
    |      |
    |      |       -----------------------------------------------
   OK     NOT OK-| Replace microswitch box 3K1548 [41]           |
    |            | Install brakes overload control unit (Ref.    |
    |            | 32-43-57, Removal/Installation).              |
    |             -----------------------------------------------
    |
    |             -----------------------------------------------
    -------------| Replace brakes overload control unit [28]     |
                  -----------------------------------------------
```

Chart 127

```
****************************************-------------------------------
* AT THE 8 BRAKE UNITS, PRESSURE IS    *| GROUND EQUIPMENT REQUIRED   |
* ZERO                                 *|-----------------------------|
****************************************| DESCRIPTION       PART NO.  |
                                        |-----------------------------|
                                        | MULTIMETER                  |
                                        -------------------------------

*******************************************************
* On LH main landing gear, check that brake unit     *
* fans operate.                                       *
*******************************************************
    |       |
    |       |    --------------------------------------------
   OK     NOT OK-| Replace relay G326 [32]                  |
    |            --------------------------------------------
    |
*******************************************************
* Depressurize Green hydraulic system (Ref. 29-11-00*
* Servicing). Make certain that landing gear safety *
* devices are in position. Place landing gear Normal*
* control lever in UP position (Press O/RIDE push-  *
* button). Remove anti-skid control unit (Ref.      *
* 32-43-31, Removal/Installation). On connector     *
* G200A, between terminals 53 and 54, voltage =     *
* 28VDC                                              *
*******************************************************
    |       |
    |       |    --------------------------------------------
   OK     NOT OK-| Replace landing gear Normal control switch [31] |
    |            | Install anti-skid control unit (Ref. 34-32-31,  |
    |            | Removal/Installation).                          |
    |            --------------------------------------------
    |
*******************************************************
* Install anti-skid control unit (Ref. 32-43-31,    *
* Removal/Installation). Remove pedal transmitter   *
* (Ref. 32-43-32, Removal/Installation). On connec- *
* tor G191A, 28VDC between terminals H and N        *
*******************************************************
    |       |
    |       |    --------------------------------------------
   OK     NOT OK-| Replace relay G326 [31]. Install brake pedal    |
    |            | transmitter (Ref. 32-43-32, Removal/Installation)|
    |            --------------------------------------------
    |
    |            --------------------------------------------
    -------------| Replace brake pedal transmitter [23]     |
                 --------------------------------------------
```

Chart 128

```
*****************************************-------------------------------
* TEMPERATURE INDICATOR READS TEMPE- *| GROUND EQUIPMENT REQUIRED    |
* RATURE OTHER THAN 100°C            *|------------------------------|
**************************************| DESCRIPTION        PART NO.  |
                                      |------------------------------|
                                      | MULTIMETER                   |
                                       -------------------------------

*****************************************************
* Remove BRAKES TEMP indicator (Ref. 32-43-53,      *
* Removal/Installation).                            *
* On connector G341A, voltage = 1.47 ±0.075 volts   *
* Temperature indicator reads 108°C                 *
*****************************************************
    |      |
    |      |     -------------------------------------------------------
   OK     NOT OK-| Replace BRAKES TEMP indicator [38]                  |
    |            -------------------------------------------------------
    |
    |            -------------------------------------------------------
     ------------| Replace wheel overheat indicating amplifier [35]    |
                 | Install BRAKES TEMP indicator (Ref. 32-43-53,       |
                 | Removal/Installation).                              |
                 -------------------------------------------------------
```

Chart 129

```
**************************************-------------------------------
* WHEN RESISTANCE IS 177 ±5Ω, WARNING*| GROUND EQUIPMENT REQUIRED   |
* LIGHT DOES NOT ILLUMINATE          *|-----------------------------|
**************************************| DESCRIPTION        PART NO. |
                                      |-----------------------------|
                                      | MULTIMETER                  |
                                      -------------------------------

****************************************************
* Remove BRAKES TEMP indicator (Ref. 32-43-53,     *
* Removal/Installation). On connector G341A, between*
* terminals X and N, voltage = 2.92 ±0.075 volts.  *
****************************************************
   |      |
   |      |     ------------------------------------------
  OK     NOT OK-| Replace BRAKES TEMP indicator [36]      |
   |            ------------------------------------------
   |
   |            ------------------------------------------
   -------------| Replace wheel overheat indicating amplifier [35].|
                | Install BRAKES TEMP indicator (Ref. 32-43-53),   |
                | Removal/Installation).                           |
                ------------------------------------------
```

Chart 130

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[1] Circuit breaker		1-213	G131	Map ref. S16	24-50-00 R/I	32-42-01
[2] Circuit breaker		3-213	G132	Map ref. D 9	24-50-00 R/I	32-43-03
[3] Circuit breaker		3-213	G181	Map ref. C 9	24-50-00 R/I	32-43-03
[4] Circuit breaker		3-213	G182	Map ref. C10	24-50-00 R/I	32-43-03
[5] Circuit breaker		1-213	G183	Map ref. S17	24-50-00 R/I	32-43-03
[6] Circuit breaker		1-213	G184	Map ref. S18	24-50-00 R/I	32-43-03
[7] Circuit breaker		2-213	G185	Map ref. A15	24-50-00 R/I	32-43-03
[8] Circuit breaker		4-213	G186	Map ref. F10	24-50-00 R/I	32-43-03
[9] Circuit breaker		4-213	G187	Map ref. A10	24-50-00 R/I	32-43-03
[10] Circuit breaker		2-213	G188	Map ref. G15	24-50-00 R/I	32-43-03
RB [11] Circuit breaker		15-215	G189	Map ref. C 6	24-50-00 R/I	32-43-01
[12] Circuit breaker		1-213	G291	Map ref. M16	24-50-00 R/I	32-61-06
[13] Circuit breaker		1-213	G292	Map ref. M17	24-50-00 R/I	32-61-06
[14] Circuit breaker		13-215	G334	Map ref. C 8	24-50-00 R/I	32-43-07
[15] Circuit breaker		15-215	G335	Map ref. F 7	24-50-00 R/I	32-43-07

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[16] Circuit breaker		3-213	G293	Map Ref. B 8	24-50-00 R/I	32-61-06
[17] BRAKES FAIL WARNING LIGHT		6-211	G135	Centre instrument panel	32-00-00 R/I	32-43-01
[18] Normal brake LP pressure switch		151	G136	Rear hydraulics bay	32-43-45 R/I	32-43-01
[19] Normal braking supply selector valve		151	G137	Rear hydraulics bay	32-43-41 R/I	32-43-01
[20] Relay		2-123	G138		32-00-00 R/I	32-43-01
[21] Emergency Parking brake unit switch assembly		9-211	G140	Under centre console	32-45-12 R/I	32-43-01
[22] Brake ANTI-SKID test indicator		2-212	G190	First Officer instrument panel	32-43-56 R/I	32-43-03
[23] Brake pedal trans-mitter		212	G191	Under First Officer floor	32-43-32 R/I	32-43-03
[24] Tachometer generator LH fwd inner		733	G192	In main gear wheel axle	32-43-35 R/I	32-43-03
LH fwd outer		733	G193	In main gear wheel axle	32-43-35 R/I	32-43-03
LH aft outer		733	G194	In main gear wheel axle	32-43-55 R/I	32-43-03

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
LH aft inner		733	G195	In main gear wheel axle	32-43-35 R/I	32-43-03
RH fwd inner		743	G208	In main gear wheel axle	32-43-35 R/I	32-43-03
RH fwd outer		743	G209	In main gear wheel axle	32-43-35 R/I	32-43-03
RH aft outer		743	G210	In main gear wheel axle	32-43-35 R/I	32-43-03
RH aft inner		743	G211	In main gear wheel axle	32-43-35 R/I	32-43-03
[25] Servo-valve						
LH fwd inner wheel		733	G196	On LH main shock absorber	32-43-63 R/I	32-43-03
LH fwd outer wheel		733	G197	On LH main shock absorber	32-43-63 R/I	32-43-03
LH aft outer wheel		733	G198	On LH main shock absorber	32-43-63 R/I	32-43-03
LH aft inner wheel		733	G199	On LH main shock absorber	32-43-63 R/I	32-43-03
RH fwd inner wheel		743	G204	On RH main shock absorber	32-43-63 R/I	32-43-03
RH fwd outer wheel		743	G205	On RH main shock absorber	32-43-63 R/I	32-43-03
RH aft outer wheel		743	G206	On RH main shock absorber	32-43-63 R/I	32-43-03
RH aft inner wheel		743	G207	On RH main shock absorber	32-43-63 R/I	32-43-03

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[26] Anti-skid control unit		10-215	G200	LH electronics rack	32-43-31 R/I	32-43-03
[27] Nosewheel tachometer generator		715	G202 G203		32-43-34 R/I	32-43-03
[28] Brakes overload control unit		9-215	G218	LH electronics rack	32-43-57 R/I	32-43-03
[29] Strain sensor						
LH fwd inner		733	G219	On brake torque arm	32-11-32 R/I	32-43-03
LH fwd outer		733	G220	On brake torque arm	32-11-32 R/I	32-43-03
LH aft inner		733	G221	On brake torque arm	32-11-32 R/I	32-43-03
LH aft outer		733	G222	On brake torque arm	32-11-32 R/I	32-43-03
RH fwd inner		743	G223	On brake torque arm	32-11-32 R/I	32-43-03
RH fwd outer		743	G224	On brake torque arm	32-11-32 R/I	32-43-03
RH aft inner		743	G225	On brake torque arm	32-11-32 R/I	32-43-03
RH aft outer		743	G226	On brake Torque arm	32-11-32 R/I	32-43-03
[30] BRAKES OVERLOAD magnetic indicator		12-214	G227	Flight Engineer panel	32-43-54 R/I	32-43-03
[31] Landing gear Normal control switch		10-211	G5	First Officer instrument panel	32-31-91 R/I	32-43-03
[32] LH gear downlocked relay		2-123	G326		32-00-00 R/I	32-43-03

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[33] Nose landing gear relay		3-123	G297		32-00-00 R/I	32-43-03
[34] LH main landing gear relay		2-123	G304		32-00-00 R/I	32-43-03
[35] Wheel overheat indicating amplifier		2-215	G336	LH electronics rack	32-43-51 R/I	32-43-07
[36] BRAKES TEMP indicator		8-214	G341	Flight Engineer panel	32-43-53 R/I	32-43-07
[37] WHEELS O/HEAT warning light		2-212	G346		32-00-00 R/I	32-43-07
[38] Brake unit temperature sensor						
LH fwd inner		733	G337	Brake unit	32-42-11 R/I	32-43-07
LH fwd outer		733	G338	Brake unit	32-42-11 R/I	32-43-07
LH aft inner		733	G339	Brake unit	32-42-11 R/I	32-43-07
LH aft outer		733	G340	Brake unit	32-42-11 R/I	32-43-07
RH fwd inner		743	G342	Brake unit	32-42-11 R/I	32-43-07
RH fwd outer		743	G343	Brake unit	32-42-11 R/I	32-43-07
RH aft inner		743	G344	Brake unit	32-42-11 R/I	32-43-07
RH aft outer		743	G345	Brake unit	32-42-11 R/I	32-43-07
RB RB [38A] Circuit breaker		1-213	G9001	Map ref. S15	24-50-00 R/I	32-43-03

ITEM NO. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
[39] Brake unit						
LH fwd inner		733	3602		32-42-11 R/I	
LH fwd outer		733	3604		32-42-11 R/I	
LH aft inner		733	3606		32-42-11 R/I	
LH aft outer		733	3608		32-42-11 R/I	
RH fwd inner		743	3603		32-42-11 R/I	
RH fwd outer		743	3601		32-42-11 R/I	
RH aft inner		743	3607		32-42-11 R/I	
RH aft outer		743	3605		32-42-11 R/I	
[40] Master cylinder			3680 3681		32-44-31 R/I	
[41] Forward thrust microswitch box			2K1548 3K1548		76-15-12 R/I	32-43-03

R

Component Identification
Table 101

PRINTED IN ENGLAND

NORMAL BRAKING - SERVICING

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

R The object is to bleed the Normal braking system using the bleed
R screws located on the torque plates.

2. Normal Brake System Bleeding

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic-Power and Preliminary Testing	EMH 398E
Removable Chocks	
R Vinyl Hose	
Container	
Lockwire Dia 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Hydraulic Fluid (Ref. 20-30-00, No.011)	

B. Prepare

R NOTE : Bleeding of the Normal braking system can be carried
R out with the aircraft jacked up or on its wheels.
R If the aircraft is jacked up, shunt following micro-switch terminals :

Terminals A and C of microswitch G320 on nose gear shock absorber.
Terminals A and B of microswitch G322 on main gear LH shock absorber.

(1) Take the precautions described in previous WARNING paragraph.

(2) Make certain that wheel chocks are in position.

(3) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(4) On centre console, check that brake selector lever is in NORM position.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
REAR OUTER WHEELS BRAKE CONT		G 183	S17
FWD OUTER WHEELS BRAKE CONT		G 184	S18
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
FWD INNER WHEELS BRAKE CONT	3-213	G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RB	WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6
RB	WHEEL BRAKES TEST IND & SUP	1-213	G9001	S15

(7) On the first brake unit to be bled, locate Normal braking system bleed screw on opposite side of torque plate to brake manifold. Remove lockwire from bleed screw.

NOTE: Use of the bleed screw remote from manifold ensures complete bleeding. Bleeding from the bleed screw adjacent to the manifold alone may not be fully effective.

(8) Connect vinyl hose to bleed screw and submerge free end of hose in a container of product No.011. (Ref. 20-30-00).

(9) Connect hydraulic ground power unit to Green hydraulic system.

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

C. Bleeding (Ref. Fig. 301)

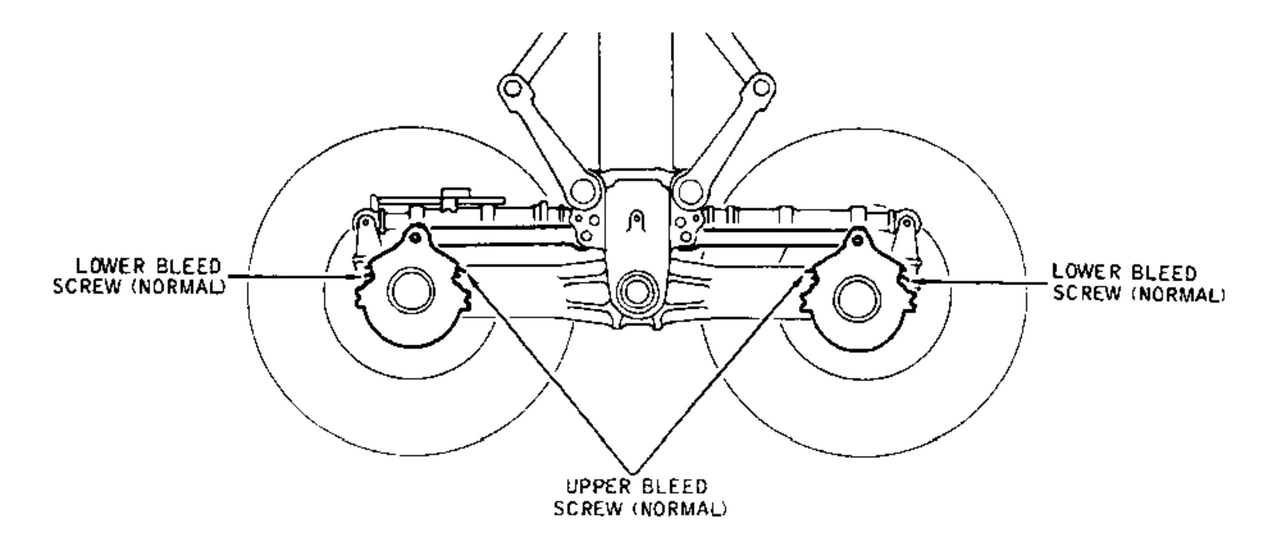
(1) Depress Captain's or First Officer's pedal corresponding to brake to be bled 4° approx. (equivalent to a pedal load of 22 daN (49.5 lbf.) approx.) to obtain a pressure at brake of between 30 and 40 bars (435 and 580 psi).

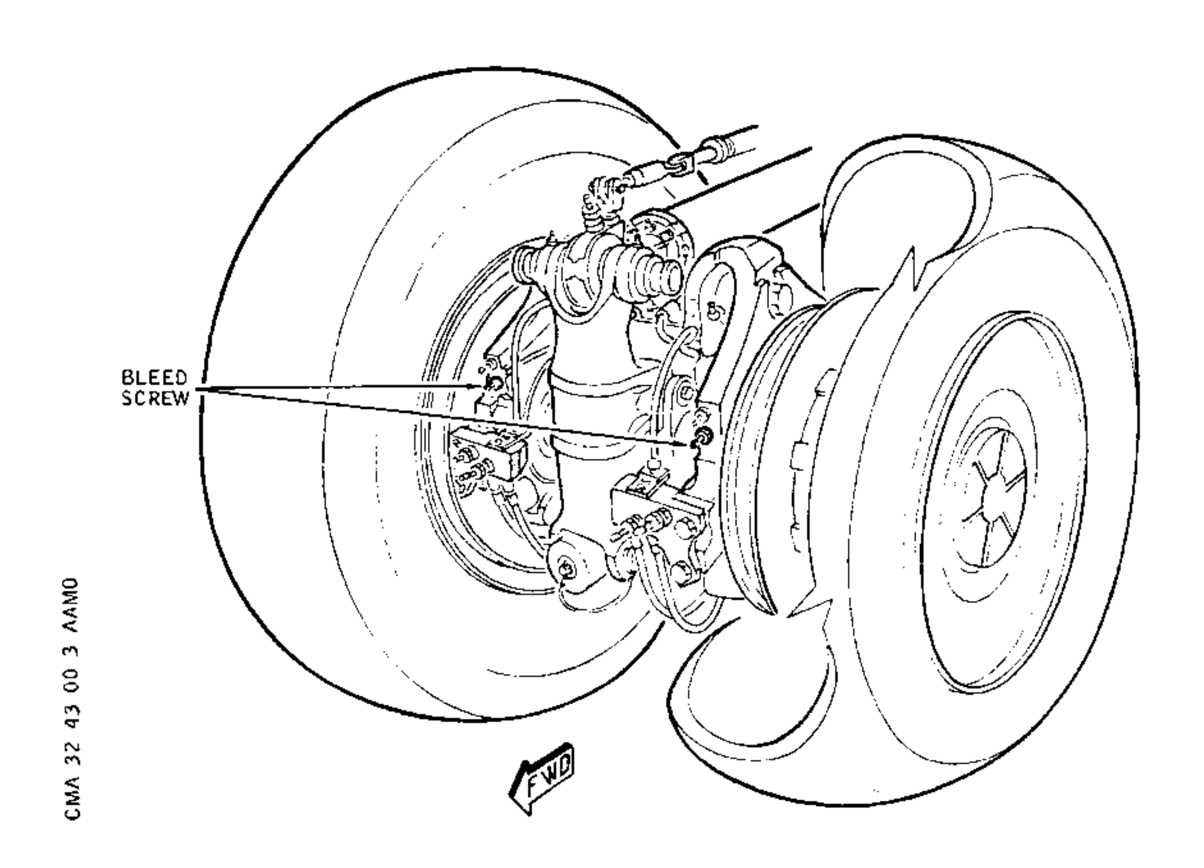
(2) Slowly loosen bleed screw to obtain a steady flow of fluid. When fluid flow is free of air bubbles, tighten bleed screw while maintaining pedal position.

NOTE: Too high a bleed pressure will cause discharging fluid to 'froth' thus making detection of air free fluid virtually impossible.

Tighten bleed screw and torque to 96 lbf in. (1.08 mdaN).
Safety bleed screw with lockwire (Ref. 20-21-13).

(3) Perform same operations for other brake units.





R Location of Normal Braking System Bleed Screws
Figure 301

D. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing). Disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

R (3) Disconnect vinyl hose.

R

R (4) Where applicable, remove shunts and connect microswitch plugs.

R (5) If necessary, replenish Green hydraulic tank (Ref. 12-12-29).

R (6) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

NORMAL BRAKING - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The following tests serve to :

A. Make certain that Normal braking system operates correctly.

B. Make certain that brake unit temperature monitoring and indicating circuit operates correctly.

2. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Wheel Chocks	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Check that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
REAR OUTER WHEELS BRAKE CONT		G 183	S17
FWD OUTER WHEELS BRAKE CONT		G 184	S18
RB WHEEL BRAKES TEST IND & SUP		G9001	S15
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
REAR INNER WHEELS BRAKE CONT		G 181	C 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8
WHEELS 1 4 A/SKID & ADAPT AMPS SUP	14-216	G 186	F10
NOSE WHEEL STEERING IND	15-215	G 92	B 6
RB WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
PLTS LT TEST SUP		L1001	E14
WHEEL O/HEAT IND		G 335	F 7

(3) Position wheel chocks.

(4) On First Officer's instrument panel, place landing

gear Normal control lever in DOWN position.

(5) On centre console, make certain that brake selector lever is in NORM position.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Lights Test

(1) On centre console, place and hold LIGHTS TEST switch in TEST position.

On centre instrument panel, BRAKES FAIL and BRAKES EMERG warning lights come on.

NOTE : Ignore other lights that might come on.

(2) Release LIGHTS TEST switch ; switch returns to HI position.

BRAKES FAIL and BRAKES EMERG warning lights go out.

(3) On First Officer's side console, place and hold D/B LIGHT switch in TEST position.

On First Officer's instrument panel :

(a) The eight R lights on brake ANTI-SKID test indicator come on.

(b) WHEELS O/HEAT warning light comes on.

NOTE : Ignore other lights that might come on.

(4) Release D/B LIGHT switch ; switch returns to HI position.

(a) The eight R lights go out.

(b) WHEELS O/HEAT warning light goes out.

(5) On Flight Engineer's panel 12-214, place and hold LIGHTS TEST switch in TEST position.

- On Flight Engineer's panel 12-214, the eight red lights on BRAKES TEMP indicator come on.

NOTE : Ignore other lights that might come on.

(6) Release LIGHTS TEST switch ; switch returns to HI position.

The eight red lights on BRAKES TEMP indicator go out.

D. Nose Gear Tachometer Generator Test

(1) On First Officer's instrument panel, on brake ANTI-SKID test indicator, place TEST 1/TEST 2 switch in TEST 1 position then release.

On First Officer's instrument panel, the eight R lights come on while switch is in TEST 1 position.

(2) Place and hold TEST 1/TEST 2 switch in TEST 2 position.

The eight R lights come on.

(3) On First Officer's side console, place D/B LIGHT switch in LO position.

The eight R lights are dimmed.

(4) Place D/B LIGHT switch in HI position.

The eight R lights recover normal brightness.

(5) Release TEST 1/TEST 2 switch.

The eight R lights go out.

E. Brake Overload Test

(1) In zone 215, remove rack panel 215DS.

(2) In electronics rack 9-215, on brakes overload control unit G218, simultaneously press OVERLOAD and TEST push-buttons.

(a) On brakes overload control unit, the eight magnetic indicators show "white".

(b) On Flight Engineer's panel 12-214, BRAKES OVERLOAD magnetic indicator shows "white".

(3) On brakes overload control unit, press RESET push-button.

(a) On brakes overload control unit, the eight magnetic indicators show "black".

(b) On Flight Engineer's panel 12-214, BRAKES OVERLOAD magnetic indicator shows "black".

F. Check of Strain Sensor Drift

(1) In zone 215, remove rack panel 215DS

(2) In electronics rack 9-215, on brakes overload control unit, place rotary selector in each of the eight positions corresponding to the eight strain sensors and check on the galvanometer that drift for each strain sensor does not exceed ± 450 mV. Place rotary selector in OFF position.

G. BRAKES TEMP Indicator Test

RB NOTE: This check verifies correct electrical connection of
RB the MLG brake temperature monitoring system, i.e.
RB that the appropriate MLG brake temp sensor operates
RB the appropriate cockpit annunciator.

(1) On Flight Engineer's panel, on BRAKES TEMP indicator, press and hold TEST pushbutton.

(a) On BRAKES TEMP indicator, the eight red lights come on.
(b) On BRAKES TEMP indicator, the temperature indicator reads 280°C approx.
(c) On First Officer's instrument panel, WHEELS O/HEAT warning light comes on.

(2) On Flight Engineer's panel, place LIGHTS TEST switch in LO position.

On BRAKES TEMP indicator, the eight red lights are dimmed.

(3) Place LIGHTS TEST switch in HI position.

The eight red lights recover normal brightness.

(4) On First Officer's side console, place D/B LIGHT switch in LO position.

On First Officer's instrument panel, WHEELS O/HEAT warning light is dimmed.

(5) Place D/B LIGHT switch in HI position.

WHEELS O/HEAT warning light recovers normal brightness.

(6) On BRAKES TEMP indicator, release TEST pushbutton.

(a) On BRAKES TEMP indicator, the eight red lights go out.

(b) The temperature indicator displays the temperature of the hottest brake unit.

(c) On First Officer's instrument panel, WHEELS O/HEAT warning light goes out.

RB (7) Gain access to the No. 1 MLG brake temperature sensor and disconnect the electrical connector.

RB (8) Check on Flight Engineer's panel brakes temperature indicator that the appropriate red indicator light illuminates and the dial indicator reads full scale.

RB (9) Reconnect brake temperature sensor electrical connector and verify that the red indicator light extinguishes and the dial indicator returns to its original reading.

RB (10) Repeat (7) thru (9) at all remaining brake positions.

H. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(3) In zone 215, install rack panel 215DS.

3. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-
Circuit Breaker Safety Clips	-
Manometer of 0 to 300 bar (0 to 4350 psi)	3BA - 18940
Wheel Chocks	-
Multimeter	-
Lockwire Dia. 0.60 mm (0.024 in) Corrosion Resistant Steel	-
Snapwire 0.020 in (0.50 mm)	-

R

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Check that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
YEL/GRN GRN FAIL PFC & RELAY JACK "A" SYS CONT		C 285	P16
WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
REAR OUTER WHEELS BRAKE CONT		G 183	S17
FWD OUTER WHEELS BRAKE CONT		G 184	S18
WHEEL BRAKES TEST IND & SUP		G9001	S15

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
YELL/GRN GRN FAIL PFC & RELAY JACK "B" SYS CONT	3-213	C 283	A 9
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		G 293	B 8
REAR INNER WHEELS BRAKE CONT		G 181	C 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
WHEELS O/HEAT DETECT SUP	13-215	G 334	C 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
PLTS LT TEST SUP		L1001	E14
WHEEL O/HEAT IND		G 335	F 7

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Connect a pressure gauge, 0 to 300 bar (0 to 4350 psi), to Normal braking system manifold of each brake unit. Cut lockwire and open corresponding valves.

R
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C. Nosewheel Tachometer Generator Test

(1) On First Officer's instrument panel, on brake ANTI-SKID test indicator, place TEST 1/TEST 2 switch in TEST 1 position then release.

On brake ANTI-SKID test indicator, the eight R lights come on while switch is in TEST 1 position.

(2) Place and hold TEST 1/TEST 2 switch in TEST 2 position.

The eight R lights come on.

(3) On First Officer's side console, place D/B LIGHT switch in LO position.

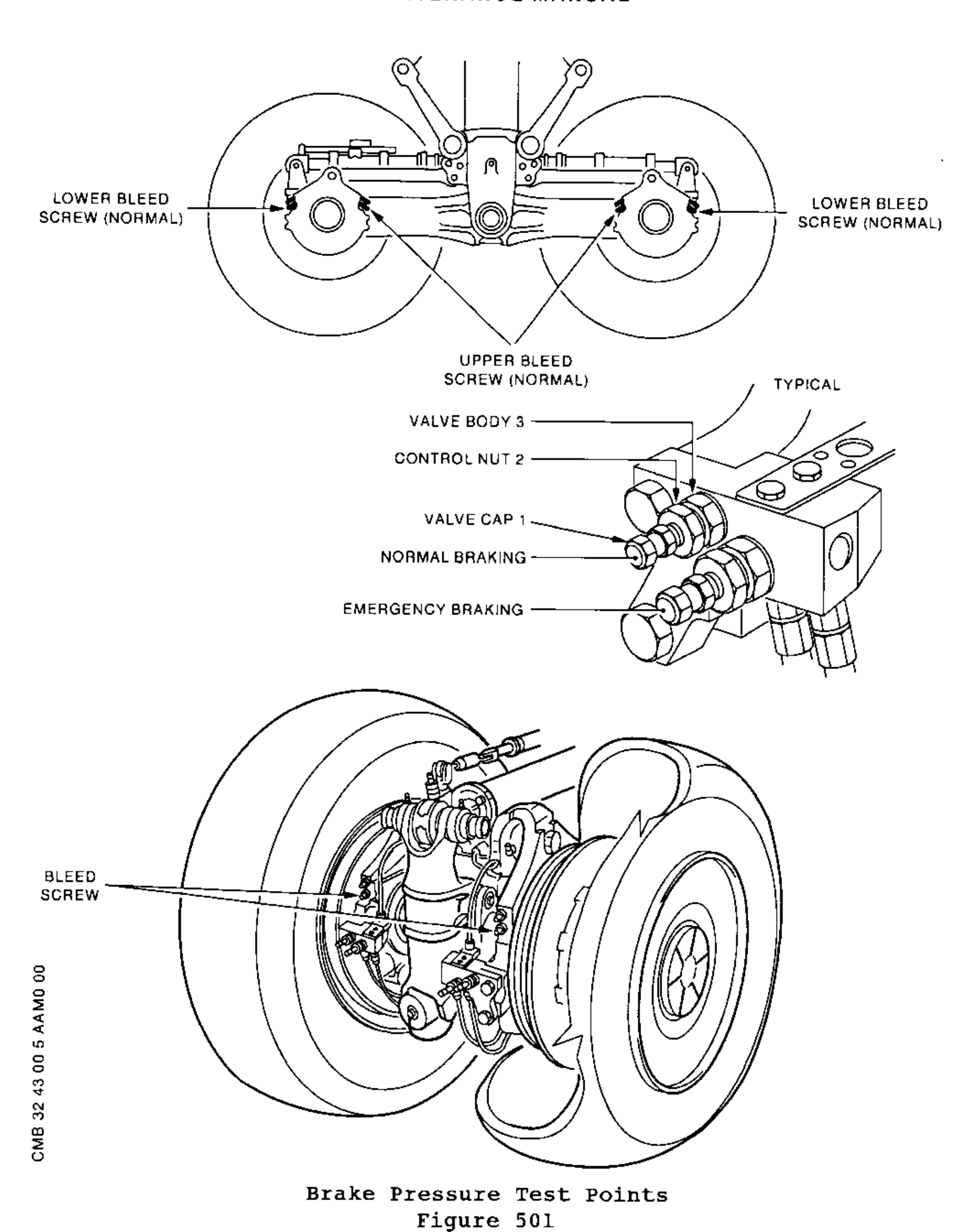
The eight R lights are dimmed.

(4) Place D/B LIGHT switch in HI position.

The eight R lights recover normal brightness.

(5) Release TEST 1/TEST 2 switch.

The eight R lights go off.



Brake Pressure Test Points
Figure 501

D. Normal Braking Supply Selector Valve (G137) Test

(1) Green/Yellow changeover

(a) Depress Captain's or First Officer's pedals then release.

On centre instrument panel, BRAKES FAIL warning light comes on while pedals are depressed and goes off when pedals are released.

(b) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(c) Depress Captain's or First Officer's pedals then release.

On centre instrument panel, BRAKES FAIL warning light remains off.

(d) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R

R (e) Depress Captain's or First Officer's pedals then release.

On centre instrument panel, BRAKES FAIL warning light remains off.

R (f) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

R (g) Depress pedals several times, hold depressed a moment then release.

On centre instrument panel, BRAKES FAIL warning light remains off.

R (h) Shut down Yellow hydraulic system (Ref. 29-21-00, Servicing).

R (j) Depress pedals several times then hold depressed.

On centre instrument panel, BRAKES FAIL warning light comes on.

R (k) Release pedals.

On centre instrument panel, BRAKES FAIL warning light goes off.

R

(2) Check of Normal braking supply selector valve electrical supply.

(a) Trip, safety and tag the following circuit breaker:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9

(b) Depress and hold Captain's or First Officer's RH pedal.

On centre instrument panel, BRAKES FAIL warning light comes on.

(c) Release pedal.

On centre instrument panel, BRAKES FAIL warning light goes off.

(d) Depress and hold Captain's or First Officer's LH pedal.

On centre instrument panel, BRAKES FAIL warning light comes on.

(e) Release pedal.

BRAKES FAIL warning light goes off.

(f) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16

R

(g) Open door 151DB

(h) Disconnect Normal braking supply selector valve electrical plug G137A.

(i) On plug G137A, connect a voltmeter between terminals A and C.

(j) Remove safety clip and tag and reset WHEEL BRAKE "B" SYS CONT circuit breaker (G132).

(k) Depress and hold Captain's or First Officer's RH pedal.

Voltmeter reads 28VDC.

(l) Release pedal

Voltmeter reads OV

(m) Depress and hold Captain's or First Officer's LH pedal.

Voltmeter reads 28VDC.

(n) Release pedal

Voltmeter reads OV.

(o) Trip, safety and tag WHEEL BRAKE "B" SYS CONT circuit breaker (G132).

(p) Disconnect voltmeter and connect plug G137A to Normal braking supply selector valve.

(3) Check of Normal braking supply selector valve electrovalve.

(a) Remove safety clip and tag and reset WHEEL BRAKE "A" SYS CONT O/LOAD IND circuit breaker (G131).

(b) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(c) Depress Captain's or First Officer's pedals then release.

Check on pressure gauges that pressure is delivered to the brake units while pedals are depressed.

(d) Trip, safety and tag WHEEL BRAKE "A" SYS CONT O/ LOAD IND circuit breaker (G131).

(e) Remove safety clip and tag and reset WHEEL BRAKE "B" SYS CONT circuit breaker (G132).

(f) Depress Captain's or First Officer's pedals then release.

Check on pressure gauges that pressure is delivered to the brake units while pedals are depressed.

(g) Remove safety clip and tag and reset WHEEL BRAKE "A" SYS CONT O/LOAD IND circuit breaker (G131).

(h) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(i) Close door 151DB.

E. Check of Pressure Delivered to Brake Units

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R

(2) Depress and hold both pedals, at the Captain's position, to second load threshold (12° approx.).

Pressure delivered to the eight brake units is 230 +10 -23 bar (3336 +145 -334 psi).

(3) Check line unions between servo-valves and brake units for leakage.

(4) Release pedals.

Pressure at the eight brake units drops to zero.

(5) Repeat check for both pedals at the First Officer's position. Results must be identical.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

RB F. Test of Normal Brake System Safety Valves.

RB NOTE : The removal of the main landing gear wheels may
RB facilitate access (Ref. MM 12-37-00).

RB (1) Disconnect the normal system hose from the brake
RB assembly manifold and place the free end into a large
RB empty container (preferably transparent with a
RB covered top).
RB NOTE : For the front wheel brakes, raises the forward
RB deflector.

RB (2) Pressurize Green hydraulic system (Ref. 29-11-00,
RB Servicing). Regulated pressure to be 4000 psi + 100
RB - 0

RB (3) Establish communication between flight deck and brake
RB unit.

RB (4) Apply max. braking at pedals and check that the fluid
RB from the disconnected hose stops flowing within 5
RB seconds and release pedals.
RB NOTE : A minimum hydraulic flow of 25L/min (5 Gal/min)
RB is necessary to meet this requirement.

RB (5) Re-arm safety valve by unscrewing and re-tightening
RB bleed screw.

RB (6) Reconnect hose assembly to brake manifold.

RB (7) Bleed brake system (Ref. 32-43-00, Servicing).

RB (8) Repeat the above for each remaining brake position.
RB NOTE : Between each safety valve check, verify fluid
RB level in Green Tank and top up if necessary
RB (Ref. MM 12-12-29).

RB (9) Shut down and depressurize Green Hydraulic System
RB (Ref. 29-11-00 Servicing).

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B G. Check of Brake Unit Temperature Indicating

(1) On Flight Engineer's panel, on BRAKES TEMP indicator:

(a) The temperature indicator displays the temperature of the hottest brake.

(b) If the temperature of one or more brake units is greater than 200 ± 20°C, the corresponding red lights are on.

(c) If the temperature of a brake unit is greater than 200 ± 20°C, on First Officer's instrument
R panel, WHEELS warning light is on.

(2) On BRAKES TEMP indicator, successively press then release each of the red lights.

On BRAKES TEMP indicator the temperature indicator displays the temperature of the brake unit corresponding to the red light pressed.

H. Check of Main Gear Wheel Braking during Landing Gear Retraction

WARNING: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DE-PRESSURIZED.

ON FIRST OFFICER'S INSTRUMENT PANEL, MAKE CERTAIN THAT THE FOUR GREEN ARROWS ON GEARS POSITION INDICATING UNIT ARE ILLUMINATED. (GEARS DOWNLOCKED).

(1) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(2) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17

R

R (3) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R (4) On First Officer's instrument panel, press O/RIDE PRESS pushbutton and place landing gear Normal control lever in UP position.

(a) Check on each pressure gauge that pressure delivered to brakes is 160 bar (2320 psi) approx.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are off.

R (5) Trip, safety and tag the following circuit breaker:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8

(a) Pressure at each brake unit is zero.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are off.

R (6) Remove safety clip and tag and reset LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP circuit breaker (G293).

R (7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) Pressure at brake units is zero.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are on.

R (8) Place landing gear Normal control lever in DOWN position.

(a) Pressure at brake units is zero.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are on.

R (9) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R (10) Remove safety clips and tags and reset NOSE UC WEIGHT SW "A" SYS SUP circuit breaker (G291) and LH UC WEIGHT SW "A" SYS SUP circuit breaker (G292).

R (11) Restore O/RIDE to initial condition and safety with snapwire 0.020 in (0.50 mm) (Ref. 20-26-13).

R

B I. Close-Up

(1) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Disconnect pressure gauge from manifold of each brake unit. Safety valves with lockwire (Ref. 20-21-13).

4. Normal Braking System Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Measuring Equipment - Brake Pedal	E920130000
Manometer of 0 to 300 bar (0 to 4350 psi)	3BA - 18940
Circuit Breaker Safety Clips	-
Wheel Chocks	-
Stabilized Power Supply (0 to 30 mV)	-
Stabilized Power Supply (0 to 20 V DC)	-
Decade Box 100 to 500 ohms	-
Disconnecting Box	-
Lockwire dia 0.60 mm (0.024 in) Corrosion Resistant Steel	-
Snapwire Dia 0.50 mm (0.020 in)	-
Multimeter	-
RB Current Draw Test Set	0C1265

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Check that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
YEL/GRN GRN FAIL PFC & RELAY JACK "A" SYS CONT		C 285	P16
WHEEL BRAKES TEST IND & SUP		G9001	S15
WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
REAR OUTER WHEELS BRAKE CONT		G 183	S17
FWD OUTER WHEELS BRAKE CONT		G 184	S18
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
YELL/GRN GRN FAIL PFC & RELAY JACK "B" SYS CONT	3-213	C 283	A 9
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		G 293	B 8
REAR INNER WHEELS BRAKE CONT		G 181	C 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
PLTS LT TEST SUP		L1001	E14
WHEEL O/HEAT IND		G 335	F 7

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Connect a pressure gauge, 0 to 300 bars (0 to 4350 psi), to Normal braking system manifold of each brake unit. Cut lockwire and open corresponding valves.

(8) In zone 215, remove rack panel 215DS.

(9) Preparation for measurement of control signal I1 and skid signal I2.

R WARNING: MAKE CERTAIN THAT GREEN AND YELLOW HYDRAULIC SYSTEMS ARE DEPRESSURIZED.

(a) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKES TEST IND & SUP	1-213	G9001	S15
WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
REAR OUTER WHEELS BRAKE CONT		G 183	S17
FWD OUTER WHEELS BRAKE CONT		G 184	S18
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6

(b) On main landing gear concerned (LH or RH), remove side cover.

(c) Disconnect electrical plug from servo-valve concerned.

RB (d) Connect a milliammeter (0 to 20 mA) or test set 0C1265 between plug and receptacle terminals C (skid signal I2 reading).

RB (e) Connect a milliammeter (0 to 20 mA) or test set 0C1265 between plug and receptacle terminals F (control signal I1 reading).

(f) Ensure continuity between plug and receptacle terminals A and E.

(g) Remove safety clips and tags and reset circuit breakers tripped in (a).

C. Tests

(1) Light tests

(a) On centre console, place and hold LIGHTS TEST switch in TEST position.

On centre instrument panel, BRAKES FAIL warning light comes on.

NOTE : Ignore other lights that might come on.

(b) Release LIGHTS TEST switch ; switch returns to HI position.

BRAKES FAIL warning light goes off.

(c) On First Officer's side console, place and hold D/B LIGHT switch in TEST position.

On First Officer's instrument panel :

- On brake ANTI-SKID test indicator, the eight R lights come on.
- WHEELS O/HEAT warning light comes on.

NOTE : Ignore other lights that might come on.

(d) Release D/B LIGHT switch ; switch returns to HI position.

(d1) The eight R lights go off.

(d2) WHEELS O/HEAT warning light goes off.

(e) On Flight Engineer's panel 12-214, place and hold LIGHTS TEST switch in TEST position.

On Flight Engineer's panel 12-214, the eight red lights on BRAKES TEMP indicator come on.

NOTE : Ignore other lights that might come on.

(f) Release LIGHTS TEST switch ; switch returns to HI position.

On BRAKES TEMP indicator, the eight red lights go off.

(2) Nose gear tachometer generator test.

(a) On First Officer's instrument panel, on brake ANTI-SKID test indicator, place TEST 1/TEST 2 switch in TEST 1 position then release.

On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights come on while switch is in TEST 1 position.

(b) Place and hold TEST 1/TEST 2 switch in TEST 2 position.

The eight R lights come on.

(c) On First Officer's side console, place D/B LIGHT switch in LO position.

The eight R lights are dimmed.

(d) Place D/B LIGHT switch in HI position.

The eight R lights recover normal brightness.

(e) Release TEST 1/TEST 2 switch.

The eight R lights go off.

(3) Brake overload test

(a) In electronics rack 9-215, on brakes overload control unit, simultaneously press OVERLOAD and TEST pushbuttons.

(a1) On brakes overload control unit, the eight magnetic indicators show "white".

(a2) On Flight Engineer's panel 12-214, BRAKES OVERLOAD magnetic indicator shows "white".

(b) On brakes overload control unit, press RESET pushbutton.

(b1) On brakes overload control unit, the eight magnetic indicators show "black".

(b2) On Flight Engineer's panel 12-214, BRAKES OVERLOAD magnetic indicator shows "black".

(4) BRAKES TEMP indicator test.

(a) On Flight Engineer's panel, on BRAKES TEMP indicator, press and hold TEST pushbutton.

(a1) On BRAKES TEMP indicator, the eight red lights come on.

(a2) On BRAKES TEMP indicator, the temperature indicator reads 280°C approx.

(a3) On First Officer's instrument panel, WHEELS O/HEAT warning light comes on.

(b) On Flight Engineer's panel, place LIGHTS TEST switch in LO position.

On BRAKES TEMP indicator, the eight red lights are dimmed.

(c) Place LIGHTS TEST switch in HI position.

The eight red lights recover normal brightness.

(d) On First Officer's side console, place D/B LIGHT switch in LO position.

On First Officer's instrument panel, WHEELS O/HEAT warning light is dimmed.

(e) Place D/B LIGHT switch in HI position.

WHEELS O/HEAT warning light recovers normal brightness.

(f) Release TEST pushbutton.

(f1) On BRAKES TEMP indicator, the eight red lights go off.

(f2) The temperature indicator displays the temperature of the hottest brake unit.

(f3) On First Officer's instrument panel, WHEELS O/HEAT warning light goes off.

D. Check of Normal Braking Supply Selector Valve Electrical Supply

(1) Trip, safety and tag the following circuit breaker :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9

(2) Depress and hold Captain's or First Officer's RH pedal

On centre instrument panel, BRAKES FAIL warning light comes on.

(3) Release pedal

On centre instrument panel, BRAKES FAIL warning light goes off.

(4) Depress and hold Captain's or First Officer's LH pedal.

On centre instrument panel, BRAKES FAIL warning light comes on.

(5) Release pedal.

BRAKES FAIL warning light goes off.

(6) Trip, safety ant tag the following circuit breaker :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16

(7) Open door 151DB.

(8) Disconnect Normal braking supply selector valve electrical plug G137A.

(9) On plug G137A connect a voltmeter between terminals A and C.

(10) Remove safety clip and tag and reset WHEEL BRAKE "B"

SYS CONT circuit breaker (G132).

(11) Depress and hold Captain's or First Officer's RH pedal.

Voltmeter reads 28VDC.

(12) Release pedal

Voltmeter reads 0V

(13) Depress and hold Captain's or First Officer's LH pedal.

Voltmeter reads 28VDC

(14) Release pedal

Voltmeter reads 0V

(15) Trip, safety and tag WHEEL BRAKE "B" SYS CONT circuit breaker (G132).

(16) Disconnect voltmeter and connect plug G137A to Normal braking supply selector valve.

(17) Close door 151DB.

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E. Check of Landing Gear Weight Relay (G304, G297) Normal Braking Electrical Circuit Contacts.

(1) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are off.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17

(a) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights come on.

(3) Remove safety clip and tag and reset LH UC WEIGHT SW "A" SYS SUP circuit breaker (G292).

On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are still on.

(4) Remove safety clip and tag and reset, trip and again reset NOSE UC WEIGHT SW "A" SYS SUP circuit breaker (G291).

On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights go off when circuit breaker is reset and remain off while circuit breaker is tripped and again reset.

F. Check of Brake Pedal Transmitter Electrical Supply

(1) On LH forward inner wheel (2) servo-valve G196 and RH forward inner wheel (3) servo-valve G204, carry out preparation described in 4.B. (9).

(2) On servo-valves G196 and G204 check that:
I1 is 10, + 1, - 0.5 mA
I2 is 0

(3) Trip, safety and tag the following circuit breaker:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FWD INNER WHEELS BRAKE CONT	3-213	G 182	C10

R

(a) On servo-valves G196 and G204 check that:
I1 is 2.7 ± 0.1 mA
I2 is 0

(4) Reset FWD INNER WHEELS BRAKE CONT circuit breaker (G182).

(5) Trip, safety and tag circuit breakers listed in para. 4.B. (9). Disconnect ammeters and connect servo-valve electrical plugs. Remove safety clips and tags and reset circuit breakers.

R

R (6) Repeat each of the operations (1) to (5) for the servo-valves corresponding to REAR INNER WHEELS BRAKE CONT circuit breaker (G181), REAR OUTER WHEELS BRAKE CONT circuit breaker (G183) and FWD OUTER WHEELS BRAKE CONT circuit breaker (G184) according to table below.

WHEEL		SERVO-VALVE	CIRCUIT BREAKER		I1 (mA)	I2
FWD INNER	LH (2)	G196	G182	SET	10 + 1 - 0.5	0
	RH (3)	G204		TRIPPED	2.7 ± 0.1	0
AFT INNER	LH (6)	G199	G181	SET	10 + 1 - 0.5	0
	RH (7)	G207		TRIPPED	2.7 ± 0.1	0
AFT OUTER	LH (5)	G198	G183	SET	10 + 1 - 0.5	0
	RH (8)	G206		TRIPPED	2.7 ± 0.1	0
FWD OUTER	LH (1)	G197	G184	SET	10 + 1 - 0.5	0
	RH (4)	G205		TRIPPED	2.7 ± 0.1	0

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G. Check of Strain Sensor Drift

(1) Check of galvanometer

(a) On one of the brake torque arms, disconnect strain sensor electrical plug.

(b) In electronics rack 9-215, on brakes overload control unit, place rotary selector in position corresponding to strain sensor concerned.

(c) On electrical plug, apply 2 mVDC between terminals
R F (-) and E (+).

In electronics rack 9-215, on brakes overload control unit, galvanometer pointer deflects.

(d) Connect strain sensor electrical plug.

(2) Check of strain sensor zero drift

(a) In electronics rack 9-215 on brakes overload control unit, check that galvanometer indicates zero ± 450 mV

(b) On brake torque arm concerned, permute strain sensors.
In electronics rack 9-215, on brakes overload control unit, check that galvanometer indicates zero ± 450 mV.

(3) Repeat operations (1) and (2) for the seven other brake torque arms.

(4) In electronics rack 9-215, on brakes overload control unit, place rotary selector in OFF position.

H. Check of Anti-Skid System

(1) Check of anti-skid system operation with aircraft in Vo configuration.

(a) On LH forward outer wheel (1) servo-valve G197, carry out preparation described in 4. B. (9).

(b) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17

(c) Remove safety clip and tag and reset LH UC WEIGHT SW "A" SYS SUP circuit breaker (G292).

(c1) On servo-valve check that :
I1 is 10 mA
I2 is 16.5 ± 2 mA

(c2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are on.

(d) Disconnect electrical plug U7055 from LH forward outer wheel (1) tachometer generator.

(e) Connect stabilized power supply (0 to 30VDC) between plug U7055 terminals A (+) and B (-). Gradually apply voltage.

(e1) On servo-valve check that :
I2 rapidly passes from 16.5 mA to 0
I2 remains 0 if voltage is increased slightly.

(e2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the corresponding R light goes off when voltage applied is between 8 and 10.5 VDC.

(f) Decrease voltage applied to plug U7055 to between 0 and 1 VDC.

(f1) On servo-valve check that :
I2 is 16.5 mA approx.

(f2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the corresponding R light comes on.

(g) Remove safety clip and tag and reset NOSE UC WEIGHT SW "A" SYS SUP circuit breaker (G291).

(g1) On servo-valve check that :
I2 = 0

(g2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are off.

(2) Check of anti-skid control

(a) Disconnect electrical plug from one of the nose gear tachometer generators (G202 or G203) and apply 10 VDC between terminals A (-) and C (+).

(a1) On servo-valve, check that :
I2 is 16.5 mA approx.

(a2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are on.

(b) Gradually apply voltage to plug U7055 (main gear tachometer generator).

(b1) On servo-valve check that :
I2 rapidly passes from 16.5 mA to 0 and remains at 0 if voltage applied is increased slightly.

(b2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the corresponding R light goes off.

(c) Slowly decrease voltage applied to plug U7055 (main gear tachometer generator).

(c1) On servo-valve, check that :
I2 rapidly passes from 0 to 16.5 mA.

(c2) On First Officer's intrument panel, on brake ANTI-SKID test indicator the corresponding R light comes on.

(d) Decrease voltage applied to main gear tachometer generator plug to 0.

(d1) On servo-valve, check that :
B I2 is 16.5mA

(d2) On First Officer's instrument panel, on brake
B ANTI-SKID test indicator the R lights go on.

B NOTE: This text is basically a repeat of test
B 4.H.(2)(a) where voltage on plug U7055 is
B zero.

(3) Trip, safety and tag the circuit breakers listed in 4B (9). Disconnect ammeter and stabilized power supply and connect servo-valve and main gear tachometer generator electrical plugs. Remove safety clips and tags and reset circuit breakers.

(4) Repeat operations (1), (2) and (3) for the seven other main gear wheels according to the table below.

WHEEL	LH FWD OUTER (1)	LH FWD INNER (2)	RH FWD INNER (3)	RH FWD OUTER (4)	LH AFT OUTER (5)	LH AFT INNER (6)	RH AFT INNER (7)	RH AFT OUTER (8)
R SERVO VALVE	G197	G196	G204	G205	G198	G199	G207	G206
TACHOMETER GENERATOR	G193	G192	G208	G209	G194	G195	G211	G210
PLUG	U7055	U7067	U7066	U7054	U7057	U7069	U7068	U7056
TERMINALS +	A	B	A	B	A	B	A	B
TERMINALS -	B	A	B	A	B	A	B	A

(5) Connect nose gear tachometer generator electrical plug.

(6) On First Officer's instrument panel, on brake ANTI-SKID test indicator place TEST 1/TEST 2 switch in TEST 1 position then TEST 2 position.

(a) On brake ANTI-SKID test indicator the eight R lights come on while switch is in TEST 1 and TEST 2 position.

I. Check of Brake Overload Control.

B NOTE: To accomplish the following check when full system
B hydraulic pressure is unavailable to normal brakes,
B it is necessary to disconnect the plug to normal
B brake low pressure switch G136 (Z151FR70) for the
B duration of the test.

(1) Check of limitation of aircraft torque to 2100 ± 150 m.daN (15500 ± 1100 lbf.ft.).

R NOTE: "Brakes Overload M.I.'s" refer to the magnetic
R indicator on the Flight Engineer's panel 12-214
R and eight (one for each wheel) on the Brake
R Overload Control Unit G218 in rack 9-215.

R (a) On servo-valve of wheel concerned carry out prep-
R aration described in 4B (9).

R (b) Depress and hold Captain's or First Officer's
R pedals.

R (b1) On servo-valve :
R I1 is 2.7 mA
R I2 is 0

R (b2) On First Officer's instrument panel, on brake
R ANTI-SKID test indicator, the eight R lights
R are off.

R (b3) All BRAKES OVERLOAD magnetic indicators
R show 'black'.

R (c) Release brake pedals.

R (d) Remove electrical plug of strain sensor correspond-
R ing to wheel concerned (Ref. table below).

R (d1) Conncect decade box set to 350 ohms between
R plug terminals B and C.

R (d2) Connect stabilized power supply between
R terminals F (-) and E (+).

WHEEL	LH	FWD	RH	FWD	LH	AFT	RH	AFT
	OUTER (1)	INNER (2)	INNER (3)	OUTER (4)	OUTER (5)	INNER (6)	INNER (7)	OUTER (8)
R STRAIN SENSORS ON FWD BRAKE TORQUE ARMS	G220	G219	G223	G224				
STRAIN SENSORS ON AFT BRAKE TORQUE ARMS					G222	G221	G225	G226
SERVO-VALVES	G197	G196	G204	G205	G198	G199	G207	G206

R (e) Fully depress and hold brake pedals.

R (e1) Check the torque limiting feature by
R slowly increasing voltage applied
R until :

R - On servo-valve :
R I1 rapidly passes from 2.7 to 12 ± 1 mA
R I2 is 0

R - The voltage simulating the torque is :
R -For the strain sensors on the forward
R brake torque arms 17.246 ± 1 mVDC
R -For the strain sensors on the aft brake
R torque arms 9.175 ± 0.5 mVDC

WHEEL	LH	FWD	RH	FWD	LH	AFT	RH	AFT
	OUTER (1)	INNER (2)	INNER (3)	OUTER (4)	OUTER (5)	INNER (6)	INNER (7)	OUTER (8)
R STRAIN SENSORS ON FWD BRAKE TORQUE ARMS	G220	G219	G223	G224				
STRAIN SENSORS ON AFT BRAKE TORQUE ARMS					G222	G221	G225	G226
SERVO-VALVES	G197	G196	G204	G205	G198	G199	G207	G206

R (f) On First Officer's instrument panel, on brake
R ANTI-SKID test indicator place TEST 1/TEST 2
R switch in TEST 2 position.

R On servo-valve, check that :
R I1 is 12 mA approx.
R I2 is 16.5 mA approx.

R (g) Release TEST 1/TEST 2 switch.

R On servo-valve, check that :
R I1 is 12 mA approx.
R I2 is 0.

R (2) Check of brake overload detection (aircraft torque
R equal to 2900 ± 290 m.daN (21300 ± 2130 lbf. ft.)).

R (a) On strain sensor electrical plug, slowly increase
R voltage until :

R (a1) On servo-valve :
R I2 passes from 0 to 10 ± 1 mA
R I1 remains at 12 mA.

R (a2) Corresponding BRAKES OVERLOAD magnetic
R indicators show "white".

R (a3) The voltage simulating the torque is :
R - For the strain sensors on the forward
R brake torque arms, 23.390 ± 2 mVDC
R - For the strain sensors on the aft brake
R torque arms, 12.245 ± 1 mVDC

R (b) Decrease voltage simulating torque to 0.

R (b1) The corresponding BRAKES OVERLOAD magnetic
R indicators still show "white".

R (b2) On servo-valve :
R I2 is 10 mA approx.
R I1 passes from 12 mA to 2.7 mA approx.

R (c) In electronics rack 9-215, on brakes overload
R control unit press RESET pushbutton.

R (c1) The corresponding BRAKES OVERLOAD magnetic
R indicators show "black".

R (c2) On servo-valve :
R I2 passes from 10 mA to 0
R I1 is 2.7 mA approx.

R (d) On strain sensor electrical plug, increase voltage
R simulating the torque until corresponding BRAKES
R OVERLOAD magnetic indicators show "white" then
R decrease voltage to 0.

R (d1) On servo-valve :
R I2 is 10 mA approx.
R I1 is 2.7 mA approx.

R (e) Place throttle control lever No.3 in max. thrust
R position.

R (e1) The corresponding BRAKES OVERLOAD magnetic
R indicators still show "white".

R (e2) On servo-valve :
R I2 is 10 mA approx.
R I1 is 2.7 mA approx.

R (f) Place throttle control lever No.3 in flight idle
R position.

R (g) Place throttle control lever No.2 in max. thrust
R position.

R (g1) The corresponding BRAKES OVERLOAD magnetic
R indicators still show "white".

R (g2) On servo-valve :
R I2 is 10 mA approx.
R I1 is 2.7 mA approx.

R (h) Place throttle control lever No.3 in max. thrust
R position (throttle control lever No.2 is still in
R max thrust position).

R (h1) The corresponding BRAKES OVERLOAD magnetic
R indicators still show "white".

R (h2) On servo-valve :
R I2 passes from 10 mA to 0
R I1 is 2.7 mA approx.

R (i) In electronics rack 9-215, on brakes overload
R control unit, press reset pushbutton.

R (i1) All BRAKES OVERLOAD magnetic indicators
R show "black".

R (i2) On servo-valve :
R I2 is 0
R I1 is 2.7 mA approx.

R (j) Place throttle control levers in flight idle
R position.

R (k) Release brake pedals.

(l) Trip, safety and tag the circuit breakers listed in 4B (9). Disconnect ammeter, decade box and stabilized power supply. Connect servo-valve and strain sensor electrical plugs.
Remove safety clips and tags and reset circuit breakers.

(m) Carry out operations (1) and (2) for the eight main gear wheels according to the table in (1).

B <u>NOTE</u>: If normal brake low pressure switch G136
B plug has been disconnected during test,
B ensure reconnection following test.

J. Check of Overload Protection in the Event of Pressure Drop then Return

(1) On servo-valve of one main landing gear wheel, carry out preparation described in para. 4.B.(9).

(a) Before resetting circuit breakers as per para. 4.B.(9)(g).

(a1) Remove protective cover from strain sensors associated with wheel concerned and disconnect electrical plug.

(a2) Connect a decade box set at 350 ohms between plug terminals B and C.

(a3) Connect stabilized power supply set at 0 volts between plug terminals F(-) and E(+).

(b) Reset circuit breakers tripped in para. 4.B.(9)(a).

- I1 is 10 mA approx.
- I2 is 0
- Make certain that BRAKES FAIL warning light, on centre instrument panel, is off.

(2) Depress and hold Captain's or First Officer's pedals to second load threshold (12 degrees approx.).

- BRAKES FAIL warning light comes on.
- I1 is 9.5 mA approx.
- I2 is 0.

R (3) With pedals depressed, pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

- BRAKES FAIL warning light goes off.
- I1 is 2.7 mA approx.
- I2 is 0.

(4) Release pedals.

- BRAKES FAIL warning light remains off
- I1 is 10 mA approx.
- I2 is 0.

(5) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R
R (6) Depress and hold Captain's or First Officer's pedals to second load threshold (12 degrees approx.).

- I1 is 2.7 mA.

R (7) With pedals depressed to second load threshold, depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

- I1 passes rapidly to 9.5 mA then, after 3 seconds approx., passes gradually back to 2.7 mA.
- I2 remains 0 (BRAKES FAIL warning light may come on momentarily: ignore this warning).

R (8) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R - Results are as in operation (6) above.

R (9) Release pedals.

R (10) On centre console, place brake selector lever in EMERG position.

- On centre instrument panel, BRAKES EMERG warning light comes on (BRAKES FAIL warning light remains off).

R (11) Depress and hold Captain's or First Officer's pedals to second load threshold (12 degrees approx.).

- BRAKES FAIL warning light remains off.
- I1 is 9.5 mA approx.
- I2 is 0.

R (12) Set stabilized power supply to 28 ± 1 mV.

- I1 is 12 mA.
- I2 is 0.
- In electronics rack 9-215, on brakes overload control unit G218, the corresponding magnetic indicator shows "white".
- On Flight Engineer's panel 12-214, BRAKES OVERLOAD magnetic indicator shows "white".

R (13) Set stabilized power supply to 0 volts.

- I1 is 9.5 mA.
- I2 is 0.
- On brakes overload control unit G218, the corresponding magnetic indicator still shows "white".
- On Flight Engineer's panel, BRAKES OVERLOAD magnetic indicator still shows "white".

R (14) On centre console, place brake selector lever in NORM position.

- I1 decreases gradually then stabilizes at 2.7 mA.
- BRAKES EMERG warning light goes off.
- BRAKES FAIL warning light remains off.

R (15) In electronics rack 9-215, on brakes overload control unit G218, momentarily press RESET pushbutton.

- On brakes overload control unit G218, the corresponding magnetic indicator shows "black".
- On Flight Engineer's panel, BRAKES OVERLOAD magnetic indicator shows "black".

R (16) Set stabilized power supply to 28 ± 1 mV.

- I1 is 12 mA.
- I2 is 10 mA.
- In electronics rack 9-215, on brakes overload control unit G218, the corresponding magnetic indicator shows "white".
- On Flight Engineer's panel 12-214, BRAKES OVERLOAD magnetic indicator shows "white".

R (17) Set stabilized power supply to 0 volts.

- I1 is 2.7 mA.
- I2 is 10 mA.
- On brakes overload control unit G218, the corresponding magnetic indicator still shows "white".
- On Flight Engineer's panel, BRAKES OVERLOAD magnetic indicator still shows "white".

INTENTIONALLY BLANK

R (18) On centre console, place brake selector lever in EMERG position.

- BRAKES EMERG warning light comes on.
- BRAKES FAIL warning light remains off.
- I1 is 9.5 mA.
- I2 is 0.
- The magnetic indicators concerned still show "white".

R (19) On centre console, place brake selector lever in NORM position.

- BRAKES EMERG warning light goes off.
- I1 decreases gradually then stabilizes at 2.7 mA.
- I2 is 0.
- The magnetic indicators concerned still show "white".

R (20) Release pedals.

R (21) In electronics rack 9-215, on brakes overload control unit G218, momentarily press RESET pushbutton.

- On brakes overload control unit G218, the magnetic indicator concerned shows "black".
- On Flight Engineer's panel 12-214, BRAKES OVERLOAD magnetic indicator shows "black".

R (22) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

R (23) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10

R (24) Disconnect decade box and stabilized power supply from strain sensor plug and connect plug.

R (25) Install protective cover on strain sensors.

R (26) Remove safety clips and tags and reset circuit
R breakers tripped in (23) above.
R

K. Check of Anti-Skid System Action on the Reference Torque

(1) Remove anti-skid control unit (Ref. 32-43-31, Removal/Installation).

(2) On LH forward outer wheel (1) servo-valve (G197), carry out preparation described in para. 4.B.(9).

R

(3) Depress and hold pedals to second load threshold (12 degrees approx.).

On servo-valve:
I1 is 2.7 mA approx.
I2 is 0.

(4) Connect a stabilized power supply to rack connector G200A terminals 47 (+) and 57 (-) and apply a voltage of 3 ± 0.1 V d.c.

On First Officer's instrument panel, on brake ANTI-SKID test indicator, the corresponding R light comes on.

R

(5) Disconnect electrical plug (G220A) from corresponding strain sensor.

(a) Connect decade box set at 350 ohms between terminals B and C.

(b) Connect stabilized power supply between terminals F (-) and E (+) and slowly simulate an increasing torque by gradually applying voltage until:

(b1) On servo-valve:

- I1 rapidly passes from 2.7 mA to 12 mA approx.

(b2) The voltage simulating the torque is:

- For RH and LH forward wheels (1, 2, 3 and 4), (forward brake torque arms), 8.80 ± 1.2 mV d.c.
- For RH and LH aft wheels (5, 6, 7 and 8), (aft brake torque arms), 4.99 ± 0.6 mV d.c.

(6) Decrease voltage simulating the torque at the strain sensor electrical plug to 0.

On servo-valve:

- I1 passes from 12 mA to 2.7 mA approx.

(7) Decrease voltage applied to rack connector to 0.

On First Officer's instrument panel, on brake ANTI-SKID test indicator, the R light concerned goes off.

(8) Trip, safety and tag the circuit breakers listed in para. 4.B.(9). Disconnect ammeter, stabilized power supply and decade box. Connect servo-valve and strain sensor electrical plugs.

Remove safety clips and tags and reset circuit breakers.

INTENTIONALLY BLANK

(9) Repeat operations (2) to (8) for the seven other main gear wheels according to table below.

WHEEL	LH FWD				RH FWD				LH AFT				RH AFT			
	OUTER (1)		INNER (2)		INNER (3)		OUTER (4)		OUTER (5)		INNER (6)		INNER (7)		OUTER (8)	
R POLARITY	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
RACK CONNECTOR G200A TERMINALS	47	57		57		57	25	57	39	57		57		57	23	57
RACK CONNECTOR G200B TERMINALS			47		25						39		23			
SERVO-VALVE	G197		G196		G204		G205		G198		G199		G207		G206	
STRAIN SENSOR	G220		G219		G223		G224		G222		G221		G225		G226	

(10) Install anti-skid control unit (Ref. 32-43-31, Removal/Installation).

L. Check of Normal Braking System Safety Features

(1) Check of servo-valve electrical control circuit open circuit safety feature.

(a) On servo-valve G197 carry out the preparation described in 4B (9).

(b) On servo-valve, check that :
I1 is 10 mA approx.
I2 is 0.

(c) Open servo-valve electrical control circuit (I1).

On servo-valve, check that :
I2 rapidly passes from 0 to 10 mA approx.

(d) Restore servo-valve electrical control circuit to normal operating condition.

On servo-valve, check that :
I1 is 10 mA approx.
I2 is 0.

(2) Check of servo-valve electrical control circuit short circuit safety feature.

(a) Short servo-valve electrical control circuit.

On servo-valve check that :
I2 rapidly passes from 0 to 10 mA approx.

(b) Restore servo-valve electrical control circuit to normal operating condition.

On servo-valve, check that :
I1 is 10 mA approx.
I2 is 0

(3) Carry out operations (1) and (2) for the seven other servo-valves.

(4) Check of strain sensor faulty power supply safety feature.

(a) Disconnect strain sensor G220 electrical plug.

On servo-valve, check that :
I1 is between 10 and 12 mA
I2 is 10 mA approx.

(b) Connect strain sensor electrical plug.

On servo-valve, check that :
I1 is 10 mA approx.
I2 is 0.

(5) Repeat operation (4) for the strain sensors of the seven other brake torque arms according to table below.

WHEEL	LH FWD		RH FWD		LH AFT		RH AFT	
	OUTER (1)	INNER (2)	INNER (3)	OUTER (4)	OUTER (5)	INNER (6)	INNER (7)	OUTER (8)
R R SERVO VALVES	G197	G196	G204	G205	G198	G199	G207	G206
STRAIN SENSORS	G220	G219	G223	G224	G222	G221	G225	G226

(6) Check of strain sensor signal open or short circuit safety feature.

(a) Connect disconnecting box between strain sensor G220 plug and receptacle.

(b) On disconnecting box, open line corresponding to terminal E.

On servo-valve G197, check that :
I1 is between 10 and 12 mA
I2 is 10 mA approx.

(c) Close line corresponding to terminal E.

On servo-valve, check that :
I1 is 10mA approx.
I2 is 0

(d) Open line corresponding to terminal F

On servo-valve, check that :
I1 is between 10 and 12 mA
I2 is 10 mA approx.

(e) Close line corresponding to terminal F

On servo-valve, check that :
I1 is 10 mA approx.
I2 is 0

(f) Repeat tests above for the strain sensors of the seven other brake torque arms according to table below.

WHEEL	LH FWD		RH FWD		LH AFT		RH AFT	
	OUTER (1)	INNER (2)	INNER (3)	OUTER (4)	OUTER (5)	INNER (6)	INNER (7)	OUTER (8)
SERVO-VALVES	G197	G196	G204	G205	G198	G199	G207	G206
STRAIN SENSORS	G220	G219	G223	G224	G222	G221	G225	G226

(7) Check of anti-skid and brakes overload control unit 115V/400 HZ power supply failure safety feature.

R (a) On the servo-valves corresponding to LH and RH aft
R outer wheels (5 and 8) carry out the preparation
R described in 4B (9).

(b) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17

(c) Depress and hold pedals to second load threshold (12 degrees approx.)

(c1) On the servo-valves, corresponding to LH and RH aft outer wheels (5 and 8) and LH and RH forward inner wheels (2 and 3) check that :
I1 is 10 +1, -0.5 mA
I2 is 16.5 ± 2 mA

(c2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are on.

(d) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15

(d1) On servo-valves corresponding to LH and RH aft outer wheels (5 and 8) check that:

- I1 passes from 10mA to 8 ± 0.8mA
- I2 is 10 ± 1mA.

(d2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the R lights corresponding to LH and RH aft outer wheels (5 and 8) are off.

R

(e) Remove safety clips and tags and reset WHEELS 5 8 A/SKID & ADAPT AMPS SUP circuit breaker (G185), NOSE UC WEIGHT SW "A" SYS SUP circuit breaker (G291) and LH UC WEIGHT SW "A" SYS SUP circuit breaker (G292).

(e1) On servo-valves corresponding to LH and RH aft outer wheels (5 and 8) check that:

- I1 is 2.7 mA approx.
- I2 is 0.

(e2) On First Officer's instrument panel brake ANTI-SKID test indicator, the eight R lights are off.

(f) Release pedals

(f1) On servo-valves corresponding to LH and RH aft outer wheels (5 and 8) check that :
I1 is 10 mA approx.
I2 is 0.

(f2) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are off.

(g) Repeat operations (a) to (f) for WHEELS 1 4 A/SKID & ADAPT AMPS SUP circuit breaker (G186), WHEELS 2 3 A/SKID & ADAPT AMPS SUP circuit breaker (G187) and WHEELS 6 7 A/SKID & ADAPT AMPS SUP circuit breaker (G188) according to table below.

CIRCUIT BREAKER TRIPPED	WHEELS	SERVO-VALVES	I1 mA	I2 mA	LIGHTS
G185	AFT OUTER LH (5)	G198	8	10	OFF
	AFT OUTER RH (8)	G206	8	10	OFF
G186	FWD OUTER LH (1)	G197	8	10	OFF
	FWD OUTER RH (4)	G205	8	10	OFF
G187	FWD INNER LH (2)	G196	8	10	OFF
	FWD INNER RH (3)	G204	8	10	OFF

CIRCUIT BREAKER TRIPPED	WHEELS	SERVO-VALVES	I1 mA	I2 mA	LIGHTS
G188	AFT INNER LH (6)	G199	8	10	OFF
	AFT INNER RH (7)	G207	8	10	OFF

(h) Trip, safety and tag the circuit breakers listed in 4B (9). Disconnect ammeters and connect servo-valve electrical plugs. Remove safety clips and tags and reset circuit breakers.

M. Check of Main Gear Tachometer Generators

(1) Remove debris guard assemblies from main gear tachometer generators.

(2) Manually rotate tachometer generator in opposite direction to normal.

On First Officer's instrument panel, on brake ANTI-SKID test indicator, the R light corresponding to the tachometer generator concerned comes on during generator reverse rotation.

(3) Carry out operation (2) for the eight main gear tachometer generators.

(4) Install debris guard assemblies on main gear tachometer generators.

N. Check of Low Pressure Warning

(1) Depress Captain's or First Officer's pedals.

On centre instrument panel BRAKES FAIL warning light comes on.

(2) On centre console, place LIGHTS TEST switch in LO position.

BRAKES FAIL warning light is dimmed.

(3) On centre console, place LIGHTS TEST switch in HI position.

BRAKES FAIL warning light recovers normal brightness.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

On centre instrument panel, BRAKES FAIL warning light goes off.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

On centre instrument panel, BRAKES FAIL warning light comes on.

(6) Release pedals

On centre instrument panel, BRAKES FAIL warning light goes off.

O. Hydraulic Test of Normal Braking Supply Selector Valve

(1) Green/Yellow changeover.

(a) Depress Captain's or First Officer's pedals then release.

On centre instrument panel, BRAKES FAIL warning light comes on while pedals are depressed and goes off when pedals are released.

(b) Pressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(c) Depress Captain's or First Officer's pedals then release.

On centre instrument panel BRAKES FAIL warning light remains off.

R

R (d) Depress Captain's or First Officer's pedals then release.

On centre instrument panel, BRAKES FAIL warning light remains off.

R (e) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

R (f) Depress pedals several times, hold depressed a moment then release.

On centre instrument panel, BRAKES FAIL warning light remains off.

R (g) Shut down Yellow hydraulic system (Ref. 29-21-00, Servicing).

R (h) Depress pedals several times then hold depressed.

On centre instrument panel, BRAKES FAIL warning light comes on.

R (j) Release pedals.

On centre instrument panel, BRAKES FAIL warning light goes off.

R

(2) Check of Normal braking supply selector valve electro-valve for correct operation.

(a) Trip, safety and tag the following circuit breaker:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9

(b) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(c) Depress Captain's or First Officer's pedals then release.

Make certain that pressure is delivered to the brakes while pedals are depressed (pressure gauges).

(d) Trip, safety and tag the following circuit breaker:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16

(e) Remove safety clip and tag and reset WHEEL BRAKE "B" SYS CONT circuit breaker (G132).

(f) Depress Captain's or First Officer's pedals then

release.

Check that pressure is delivered to the brake units while pedals are depressed (pressure gauges).

(g) Remove safety clip and tag and reset WHEEL BRAKE "A" SYS CONT O/LOAD IND circuit breaker (G131).

(h) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R P. Test of Brake Characteristics - to Test the load at Pedals, the amount of brakes pedal travel and the brake pressures available

(1) Install measuring equipment E920130000 on Captain's pedals.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) Plot the following curves:

(a) Load applied to captain's LH pedal versus pedal travel.

(b) Load applied to Captain's LH pedal versus pressure applied to each of the LH main gear brakes.

(4) Check on these curves:

(a) Pedal travel before pressure is applied to brakes. Pedal travel between 2° and 4°.

(b) Load applied to pedal before pressure is applied to brakes.
Load between 17 and 22 daN (27 and 49 lbf).

(c) Pedal travel before second load threshold is felt. Load between 30 and 38 daN (66 and 85.5 lbf). Pedal travel between 10.5° and 12.5°.

R

(d) Maximum pressure at brakes at and past second load threshold.
Maximum pressure is 230 +10 -23 bar (3336 +145 -334 psi).

(5) Repeat operations (1) to (4) for Captain's RH pedal.

(6) Check that for maximum First Officer RH and LH pedal travel maximum pressure is applied to brakes.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) Remove measuring equipment E920130000.

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Q. Check of Main Gear Wheel Braking during Landing Gear Retraction

<u>WARNING</u>: MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED.

ON FIRST OFFICER'S INSTRUMENT PANEL, MAKE CERTAIN THAT THE FOUR GREEN ARROWS ON GEARS POSITION INDICATING UNIT ARE ILLUMINATED (GEARS DOWNLOCK).

(1) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(2) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17

R

R (3) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R (4) On First Officer's instrument panel, press O/RIDE PRESS pushbutton and place landing gear Normal control lever in UP position.

(a) Check on each pressure gauge that pressure delivered to brakes is 160 bar (2320 psi) approx.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are off.

R (5) Trip, safety and tag the following circuit breaker:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8

(a) Pressure at each brake unit is zero.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are off.

R (6) Remove safety clip and tag and reset LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP circuit breaker (G293).

R (7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(a) Pressure at brake units is zero.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are on.

R (8) Place landing gear Normal control lever in DOWN position.

(a) Pressure at brake units is zero.

(b) On First Officer's instrument panel, on brake ANTI-SKID test indicator, the eight R lights are on.

R (9) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R (10) Remove safety clips and tags and reset NOSE UC WEIGHT SW "A" SYS SUP circuit breaker (G291) and LH UC WEIGHT SW "A" SYS SUP circuit breaker (G292).

R (11) Restore O/RIDE to initial condition and safety with snapwire 0.020 in (0.50 mm) (Ref. 20-26-13).

R

R. Test of Brake Unit Temperature Indicating Circuit

(1) Check of LH forward outer wheel (1) brake unit temperature indicating.

(a) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8

(b) On brake unit of LH forward outer wheel (1) disconnect temperature sensor electrical plug G338A.

(c) Connect a decade box (100 to 500 ohms) between plug G338A terminals A and B.

(d) Set decade box to 140 ohms.

(e) Remove safety clip and tag and reset WHEEL O/HEAT DETECT SUP circuit breaker (G334).

On Flight Engineer's panel, on BRAKES TEMP indicator, the temperature indicator reads 100°C approx.

(f) On decade box, slowly increase resistance until WHEELS O/HEAT warning light on First Officer's instrument panel comes on.

(f1) On BRAKES TEMP indicator :

- Brake temperature indicator reads 220 ± 20° C

- 1 FWD warning light comes on (LH forward outer wheel (1) brake unit).

(f2) Resistance on decade box is 185 ± 5 ohms.

(g) On BRAKE TEMP indicator press 1 FWD warning light then release.

Brake temperature indicator reads 220 ± 20° whether or not 1 FWD warning light is pressed.

(h) On BRAKES TEMP indicator, successively press then release each of the seven other warning lights.

With warning lights pressed, brake temperature indicator displays temperature of corresponding brake unit. Wiht warning lights released indicator reads 220°C approx.

(i) On decade box increase resistance to 300 ohms (550°C approx. on brake temperature indicator) then slowly decrease resistance until WHEELS O/HEAT warning light on First Officer's instrument panel goes off (170 ohms approx.).

(i1) On BRAKES TEMP indicator 1FWD warning light goes off.

(i2) Brake temperature indicator reads between 10 and 20°C below temperature indicated when 1FWD warning light come on in (f).

(i3) On decade box, resistance when WHEELS O/HEAT warning light goes off is between resistance when warning light come on and such resistance minus 8 ohms.

(j) Trip, safety and tag WHEEL O/HEAT DETECT SUP circuit breaker (G334).

(k) Disconnect decade box and connect temperature sensor electrical plug G338A.

(l) Remove safety clip and tag and reset WHEEL O/HEAT DETECT SUP circuit breaker (G334).

(2) Repeat operation (1) for the seven other brake units according to table below.

R

WHEEL		TEMPERATURE SENSOR PLUG	WARNING LIGHT
LH FWD	OUTER (1)	G338A	1FWD
	INNER (2)	G337A	2FWD
RH FWD	INNER (3)	G342A	3FWD
	OUTER (4)	G343A	4FWD

WHEEL		TEMPERATURE SENSOR PLUG	WARNING LIGHT
LH AFT	OUTER (5)	G340A	1REAR
	INNER (6)	G339A	2REAR
RH AFT	INNER (7)	G344A	3REAR
	OUTER (8)	G345A	4REAR

(3) Perform operational test

(a) On Flight Engineer's test, on BRAKES TEMP indicator press and hold TEST pushbutton.

(a1) On BRAKES TEMP indicator :

- The eight warning lights come on.

- The temperature indicator reads 280°C.

(a2) On First Officer's instrument panel, WHEELS O/HEAT warning light comes on.

(b) Release TEST pushbutton.

(b1) On BRAKES TEMP indicator :

- the eight warning lights go off.

- The temperature indicator displays the temperature of the hottest brake.

(b2) On First Officer's instrument panel, WHEELS O/HEAT warning light goes off.

S. Close-Up

(1) Install side covers on LH and RH main landing gears.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) In zone 215, install rack panel 215DS.

(4) Disconnect pressure gauges from brake unit manifolds. Safety valves with lockwire (Ref. 20-21-13).

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

END OF THIS SECTION

NEXT

ANTI-SKID CONTROL UNIT - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The anti-skid control unit serves to achieve maximum braking without uncontrolled skidding or locking of the wheels.
The anti-skid control unit is located in the LH electronics compartment at floor level.

2. Anti-Skid Control Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) Make certain that the aircraft electrical network is de-energized.

(2) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE 'A' SYS CONT O/LOAD IND	1-213	G 131	S16
R	REAR OUTER WHEELS BRAKE CONT		G 183	S17
R	FWD OUTER WHEELS BRAKE CONT		G 184	S18
R	WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
R	WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
R	REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
R	FWD INNER WHEELS BRAKE CONT		G 182	C10

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
B WHEEL BRAKES TEST IND & SUP	1-213	G9001	S15
WHEEL BRAKE 'B' SYS CONT	3-213	G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
RB B WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6

C. Remove (Ref. Fig. 401)

(1) Remove access panel 215DS.

(2) Unscrew knurled nuts (2) and disengage control unit attach fittings (1).

(3) Slowly disengage control unit from its support and remove control unit.

B (4) Examine rack and unit connectors for:

B (a) Bent, damaged or corroded contact pins.

B B (b) Distorted, displaced or blackened socket contacts.

B (c) Pierced, or otherwise damaged dielectric.

B B (d) Connector body free from damaged polarising posts and keyways.

B NOTE: If connector is damaged refer to WDM 20-42-71.

D. Install

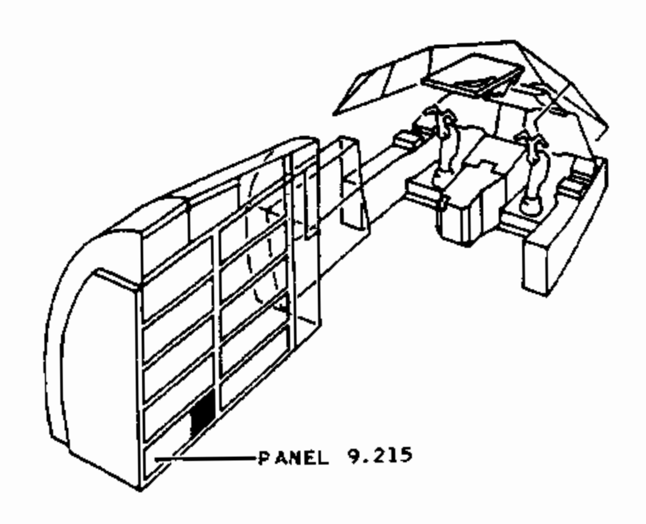
B (1) Examine unit connector for:

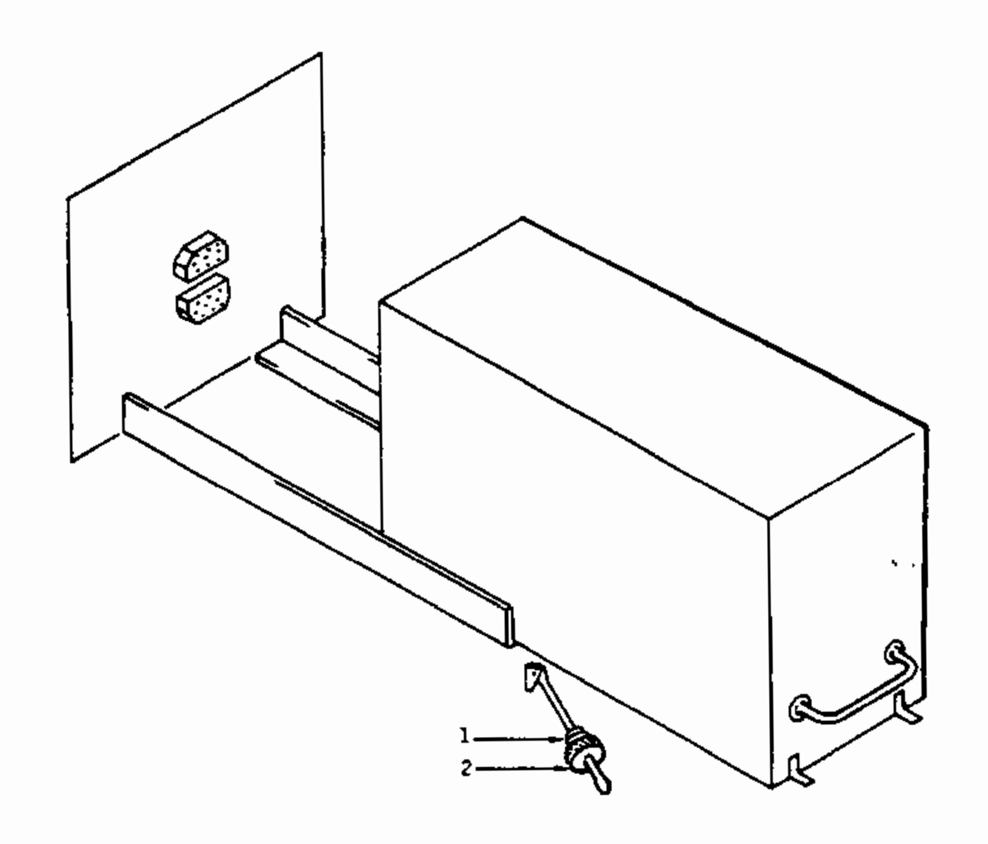
B (a) Bent, damaged or corroded contact pins.

B B (b) Distorted, displaced or blackened socket contacts.

B (c) Pierced, or otherwise damaged dielectric.

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Anti-Skid Control Unit
Figure 401

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RB (d) Connector body free from damaged polarising posts
RB and keyways.

RB NOTE: If connector is damaged refer to WDM 20-42-71.

(2) Positon control unit on its support and slide fully home.

(3) Engage attach fittings (1) and tighten knurled nuts (2).

(4) Remove safety clips and tags and reset circuit breakers.

R E. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network. (Ref. 24-41-00, Servicing).

(2) On First Officer's instrument panel, on brake ANTI-SKID test indicator place TEST 1/TEST 2 switch in TEST 1 position then release.

- On First Officer's instrument panel, on brake ANTI SKID test indicator the eight R lights come on during pulse in TEST 1 position.

(3) Place TEST 1/TEST 2 switch in TEST 2 position then release.

- The eight R lights come on during pulse in TEST 2 position.

R F. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Install access panel 215DS.

BRAKE PEDAL POSITION TRANSMITTER - REMOVAL/INSTALLATION

1. General

The pedal position transmitter is located under the First Officer station floor. It controls electrically the Normal braking supply selector valve unit opening and closing and transmits the braking signal to the first coil of each of the eight servo-valves.
The Pilot and First Officer pedals control the pedal position transmitter mechanically through two spring rods.

2. Brake Pedal Position Transmitter

A. Equipment and Materials

DESCRIPTION	PART NO.
Test Set - Pedal Position Transmitter	D921601000
Access Platform 3.97 m (13 ft.)	
Circuit Breaker Safety Clips	
Lockwire Dia. 1 mm (0.041 in.) (Corrosion Resistant Steel)	
Common Grease (Ref. 20-30-00, No.051)	

B. Prepare

(1) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R	REAR OUTER WHEELS BRAKE CONT		G 183	S17
R	FWD OUTER WHEELS BRAKE CONT		G 184	S18
R				
R	REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
R	FWD INNER WHEELS BRAKE CONT		G 182	C10
R	WHEEL BRAKE "B" SYS CONT		G 132	D 9
R				

(2) Open access doors 113DB and 121AB under nose cone.

C. Remove
(Ref. Fig. 401)

(1) Note relative position of plugs and receptacles and disconnect plugs from pedeal position transmitter.

R (2) Cut and remove lockwire, remove bolts (6) and (12). Disconnect spring rods (5) and (14) from control levers (7) and (13).

(3) Cut and remove lockwire, remove bolts (9) and (10). Retain washers (8) and (11) for reinstallation.

(4) Remove pedal position transmitter.

D. Preparation of Replacement Component

(1) Check that spring rod (5) centre-to-centre distance is 5.20 in. (132 mm).

(2) Check that spring rod (14) centre-to-centre distance is 11.25 in. (286 mm).

E. Install

(1) Install pedal position transmitter on its mounting.

(a) Lubricate bolts (9) and (10) with Product No.051.

(b) Tighten bolts (9) and (10) fitted with their respective washers (8) and (11).

R (c) Safety bolts (9) and (10) with lockwire (Ref.
R 20-21-13).

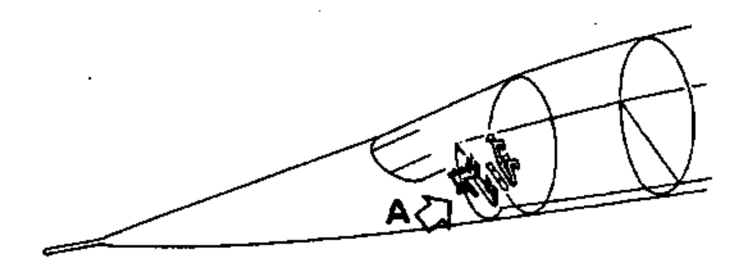
(2) Connect test set D921601000 to pedal position transmitter receptacles.

(3) Make certain that Captain and First Officer pedals are in released position.
Pins of cranks (2) and (4) must be in contact with upper stops (1) and (3).

(4) Connect spring rod (5) to pedal position transmitter lever (7) with lubricated bolt (6).

(5) Adjust spring rod (5).

(a) The test equipment indicator light must be illuminated.



A

STOP
1
2 CRANK
3 STOP
4 CRANK
5 SPRING ROD
6
7 LEVER
SPRING ROD
14
12
13
LEVER
11
10
8
9

CMA 32 43 32 4 AAMO

Pedal Position Transmitter
Figure 401

(b) Disconnect spring rod (5) from lever (7).

(c) Shorten spring rod (5) by half a turn.

(d) Connect spring rod (5) to lever (7).

R

(e) Depress associated brake pedal to mid-travel. Allow it to return slowly to fully released position against mechanical stop. The test light goes out.
If test set indicator light remains illuminated, shorten spring rod (5) by half a turn.
If necessary repeat procedure until the test light goes out.
When test set indicator light goes out, shorten spring rod (5) by a further one and a half turns.

(f) Tighten locknut on spring rod (5) to lock end-fitting and safety with lockwire (Ref. 20-21-13).

(6) Disconnect spring rod (5) from lever (7).

NOTE : The adjustment of spring rods (5) and (14) must be made separately.
Only one spring rod must be connected to the pedal position transmitter during adjustment.

(7) Connect spring rod (14) to lever (13) on pedal position transmitter with lubricated bolt (12).

(8) Adjust spring rod (14).

(a) The test equipment indicator light must be illuminated.

(b) Disconnect spring rod (14) from lever (13).

(c) Lengthen spring rod (14) by half a turn.

(d) Connect spring rod (14) to lever.

R

(e) Depress associated brake pedal to mid-travel. Allow it to return slowly to fully released position against mechanical stop. The test light goes out.

- If test light remains illuminated, lengthen spring rod (14) by half a turn. If necessary, repeat procedure until test light goes out.
- When test light goes out, lengthen spring rod (14) by a further one and a half turns.

(f) Tighten locknut on spring rod (14) to lock end-fitting and safety with lockwire (Ref. 20-21-13).

(9) Connect spring rod (5) to lever (7) on pedal position transmitter with lubricated bolt (6).

F. Test

(1) Slowly depress Captain and First Officer RH pedals in turn, checking that :

(a) The spring rod (14) sliding rod extends as the pedal approaches lower stop (1).

(b) Pin of crank (2) comes up against lower stop (1).

(c) When pedal is released the associated test set indicator light goes off before upper stop (1) is reached.

(2) Slowly depress Captain and First Officer LH pedals in that order checking that :

(a) The spring rod (5) sliding rod retracts as the pedal approaches the lower stop (3).

(b) Pin of crank (4) comes up against stop (3).

(c) When the pedal is released the associated test set indicator light goes off before the upper stop (3) is reached.

G. Close-Up

(1) Disconnect test set D921601000.

(2) Connect both plugs to transmitter.

(3) Tighten bolts (6) and (12) and safety with lockwire (Ref. 20-21-13)

(4) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(5) Close access doors 113DB and 121AB.

(6) Remove access platform.

(7) Remove safety clips and tags, and reset circuit breakers.

RB H. Aircraft Tests

RB (1) Pressurize green hydraulics (Ref. 29-11-00 Servicing).

RB (2) Depress and release the Captains foot pedals and
RB visually check that all brakes apply and release
RB accordingly.

RB (3) Shut down and de-pressurize Green hydraulics system
RB (Ref. 29-11-00 Servicing).

NOSE GEAR TACHOMETER GENERATOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nose gear is fitted with two tachometer generators. As they are identical only one removal is dealt with in this topic.

2. Nose Gear Tachometer Generator

A. Equipment and Materials

DESCRIPTION	PART NO.
Sealant (Ref. 20-30-00, No.361)	
R Lockwire Dia. 0.5 mm (0.020 in.) - Corrosion Resistant Steel	

B. Prepare

Not applicable.

C. Remove

(1) Cut and remove lockwire, disconnect plug (1) from electrical connector on tachometer generator casing.

R (2) Remove cotter pins (7), remove nuts (6), bolts (4)
R and washers (5).

(3) Remove the tachometer generator assembly very slowly together with driving mechanism (9-10-11-12).

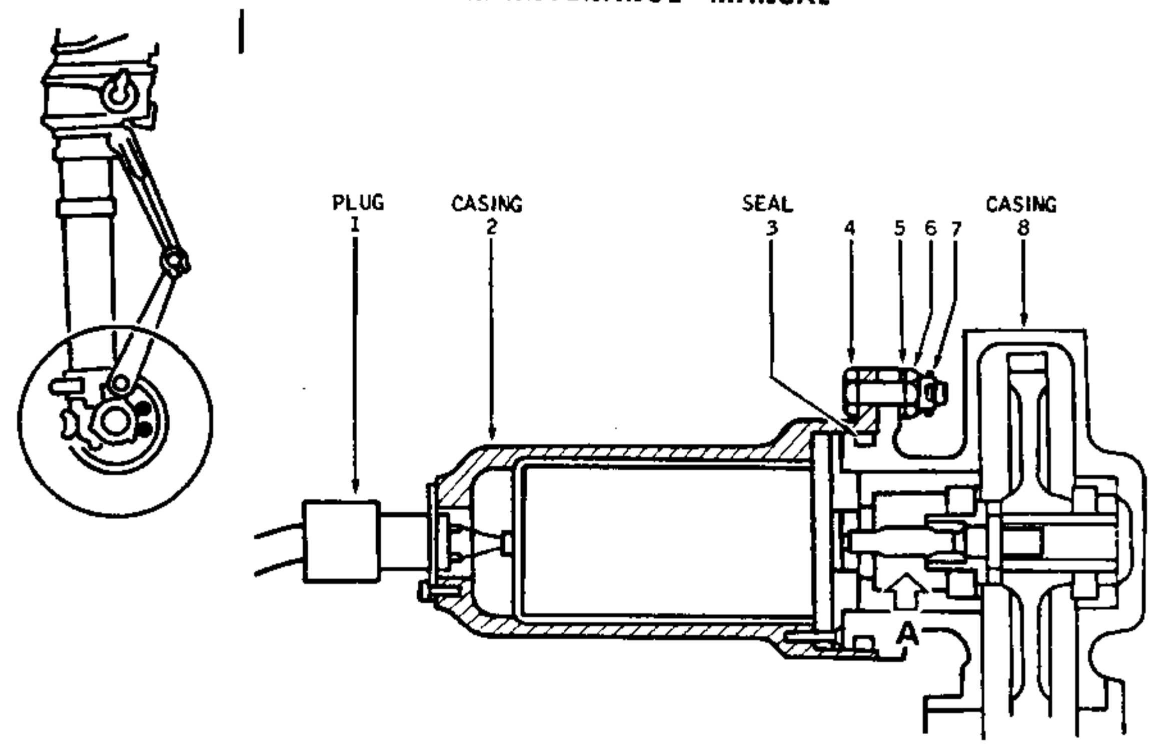
D. Preparation of Replacement Component

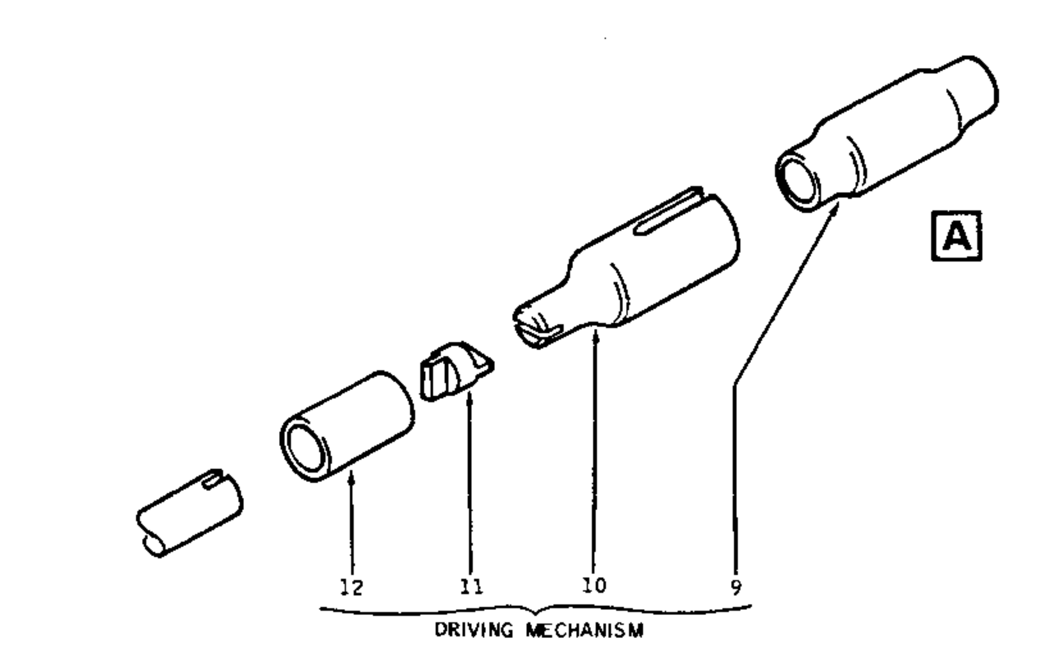
NOTE : Driving mechanism (9-10-11-12) and bolts (4), was-
R hers (5) and nuts (6) are parts of the tachometer generator assembly.

E. Install

(1) Check that seal (3) bears correctly on casing (8). If damaged, replace seal.

(2) Check driving mechanism (9-10-11-12) for correct in-





Tachometer Generator - Nose Gear
Figure 401

sertion in the tachometer generator assembly.

(3) Check that the driving mechanism rotates freely.

(4) Install the tachometer generator and check that the driving mechanism is correctly engaged in the relevant recess.

(5) Attach the tachometer generator to casing (8) by means of bolts (4), washers (5) and nuts (6).
Safety nuts (6) with cotter pins.

R (6) Coat bolts (4), nuts (6) and tachometer generator/
R casing (8) joint with Product No.361.

(7) Connect plug (1) to electrical connector on tachometer
R generator casing and wirelock (Ref. 20-21-13).

F. Tests

Carry out tachometer generator operational test (Ref.
R 32-43-00, Adjustment/Test).

G. Close-Up

MAIN LANDING GEAR TACHOMETER GENERATOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The fan motor and tachometer generator assembly is installed inside a housing integral with the wheel/axle end fitting.

The wheel must be removed to gain access to the tachometer generator assembly.

2. Main Gear Tachometer Generator Assembly

A. Equipment and Materials

DESCRIPTION	PART NO.
Removable Chocks	
Nose and Main Gear Wheel Change Jack (Inflated Tyre)	07-20-0001
Common Grease (Ref. 20-30-00, No.060)	
Lockwire, Corrosion Resistant Steel, Dia. 0.80 mm (0.032 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position removable chocks.

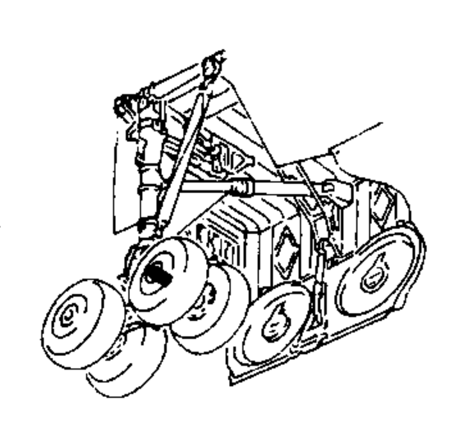
(3) Check, in flight compartment, on centre console, that brake selector lever is in NORM position.

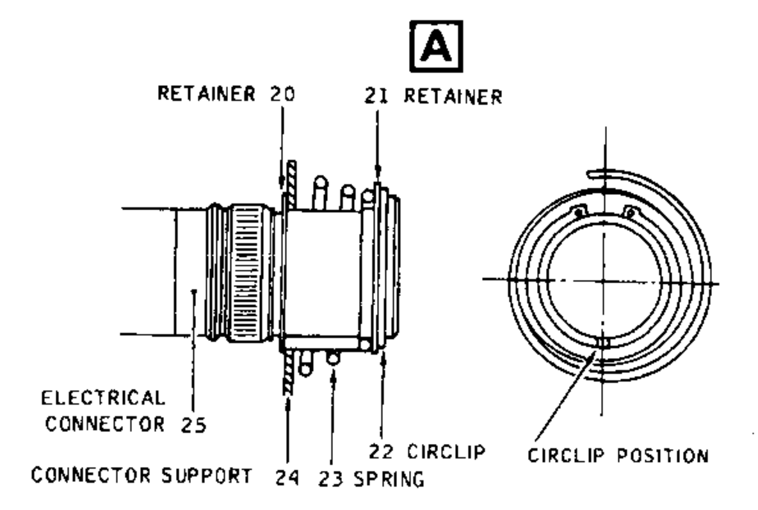
(4) Remove fan (2) (Ref. 32-47-12, Removal/Installation).

(5) Jack up bogie concerned and remove wheel (8) (Ref. 12-37-00).

(6) Remove fan motor (5) (Ref. 32-47-11, Removal/Installation).

C. Remove





FAN 2
O-RING SEAL 1
LOCKING PIN 3
SCREW 4
FAN MOTOR 5
A
TACHOMETER GENERATOR 14
STOP 13
11-12
10 CLIP
9 SUPPORT ASSEMBLY
FOOLPROOF PIN 6
SCREW 4
AXLE SLEEVE 7
WHEEL 8

CMA 32 43 35 4 AAMO

R Tachometer Generator Assembly
Figure 401

(1) Cut and remove lockwire, loosen screws (4).

(2) Remove locking pins (3).

NOTE : It is not necessary to remove foolproof pin (6) and associated screw (4) from support assembly (9).
R Before removing axle sleeve (7), note whether thread is LH or RH and note its position on wheel axle.

(3) Remove axle sleeve (7).

(4) Withdraw fan motor and generator support assembly (9).

(5) Disconnect electrical connector from generator (14).

(6) Cut and remove lockwire and remove screws (11) on clip (10).

R (a) Remove washers (12).

(b) Remove clip (10) with fan motor wiring.

(c) Remove generator stop (13).

(7) Remove generator (14) from support assembly (9).

(8) Remove and discard O-ring seals (1).

R (9) If fan motor and tachometer generator support assembly
R (9) is to be removed, remove electrical connector (25)
R from its support (24) as follows :

R (a) Compress spring (23) and remove circlip (22)

R (b) Remove retainer (21) and spring (23)

R (c) Remove electrical connector (25) from support
R (24).

D. Preparation of Replacement Component

R (1) If fan motor and tachometer generator support assembly
R (9) has been removed, install electrical connector (25)
R on support (24) as follows :

R (a) Position electrical connector (25) equipped with
R retainer (20) in support (24)

R (b) Install spring (23) and retainer (21)

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R (c) Install circlip and position as per figure.

E. Install

(1) Lubricate O-ring seals (1) with product No.060 and install them on generator (14).

(2) Install generator (14) in support assembly (9) and position it to accomodate stop (13).

(3) Install generator stop (13), clip (10) and wiring.

(4) Install screws (11) together with washers (12). Torque to between 0.05 and 0.1 m.daN (4.5 and 9 lbf. in.).

(a) Safety screws (11) with lockwire.

(5) Connect electrical connector to generator.

(6) Make certain that foolproof pin (6) and screw (4) are installed in support assembly (9).

(7) Position support assembly(9) on axle.

WARNING : PRIOR TO INSTALLATION MAKE CERTAIN THAT SLEEVE THREAD IS CORRECT HAND i.e. LH OR RH.

(8) Install axle sleeve.

(9) Lock axle head, sleeve (7) and support assembly (9) by means of locking pins (3).

(10) Tighten screws (4). Torque to between 0.05 and 0.1 m.daN (4.5 and 9 lbf. in.).

R (a) Safety screws (4) with lockwire (Ref. 20-21-13).

(11) Install fan motor (5) (Ref. 32-47-11, Removal/ Installation).

(12) Install wheel (8) (Ref. 12-37-00).

(13) Install fan (2) (Ref. 32-47-12, Removal/Installation).

F. Test

Carry out tachometer generator assembly test (Ref. 32-43-35, Adjustment/Test).

G. Close-Up

Remove jack 07-20-0001.

MAIN LANDING GEAR TACHOMETER GENERATOR - ADJUSTMENT/TEST

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

B NOTE: This check ensures correct operation of a tachogenerator
B circuit and its respective servo valve and brake unit.
B It is to be completed at relevant tachogenerator positions
B following either a MLG change or major brake/antiskid
B system wiring disturbance. It is also a periodic AMS
B requirement.

1. General

The object is to make certain that the Normal braking system of a main gear wheel operates correctly after replacement of the associated main gear tachometer generator.

2. Main Landing Gear Tachometer Generator

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Removable Chocks	
B Brake Unit Pressure Test Gauge	3-BA18940
B (8 off required for AMS check)	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) Position wheel chocks.

R NOTE: If the aircraft is jacked up, shunt the

terminals of following microswitches:
Terminals A and C of microswitch (G320) on nose gear shock absorber.
Terminals A and B of microswitch (G322) on LH main gear shock absorber.

(3) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(4) Make certain that the following circuit breakers are set:

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
	LH UC WEIGHT SW "A" SYS SUP		G 292	M17
	WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
	REAR OUTER WHEELS BRAKE CONT		G 183	S17
	FWD OUTER WHEELS BRAKE CONT		G 184	S18
RB	WHEEL BRAKES TEST IND & SUP		G9001	S15
	WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
	WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
	REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
	FWD INNER WHEELS BRAKE CONT		G 182	C10
	WHEEL BRAKE "B" SYS CONT		G 132	D 9
	WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
	WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
RB	WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6

(5) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL or DOWN

position.

(6) Ensure that the normal brake system is depressurised, then connect a pressure gauge 0 to 300 bar (0 to 4350 psi) to the normal braking system manifold of each brake unit. Cut lockwire and open corresponding valves.

(7) On centre console, make certain that brake selector lever is in NORM position.

(8) Remove debris guard assembly associated with tachometer generator.

C. Test

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Depress brake pedal to second threshold (max pressure 3336 psi + 145 - 334) on side corresponding to the generator to be checked.

(3) Check full system pressure on gauge and that brake discs are locked.

(4) Manually rotate the generator intermittently, in the opposite direction to normal.

(5) Visually check that each speed impulse thus applied to the generator results in the associated brake pressure immediately reducing to zero (or return pressure) on gauge causing brake release.

(6) Repeat (2) to (4) for all generator positions to be checked.

(7) Release Brake pedal.

D. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Disconnect pressure gauges from brake unit manifolds. Safety valves with lockwire (ref. 20-21-13).

(3) De-energize the aircraft electrical network disconnect electrical ground power unit.

(4) Install debris guard assembly.

NOTE: If the aircraft is jacked up, remove shunts. Connect microswitch plugs.

NORMAL BRAKING SUPPLY SELECTOR VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The Normal braking supply selector valve enables the Normal braking system to be supplied with Green or Yellow hydraulic pressure.
The selector valve is located in the hydraulics bay ; access door 151DB.

2. Selector Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Access Platform 3.85 m (12 ft. 6 in.)	
Hydraulic Fluid Container	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(3) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(4) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
WHEEL BRAKE "B" SYS CONT	3=213	G 132	D 9

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical plug.

(2) Cut lockwire and remove screws (6), retain washers (7) for reinstallation.

(3) Remove selector valve and spools (5) (6 off).

D. Preparation of Replacement Component

(1) Make certain that replacement spools are correctly fitted with back-up rings, O-ring and square section seal (Ref. 20-22-16).

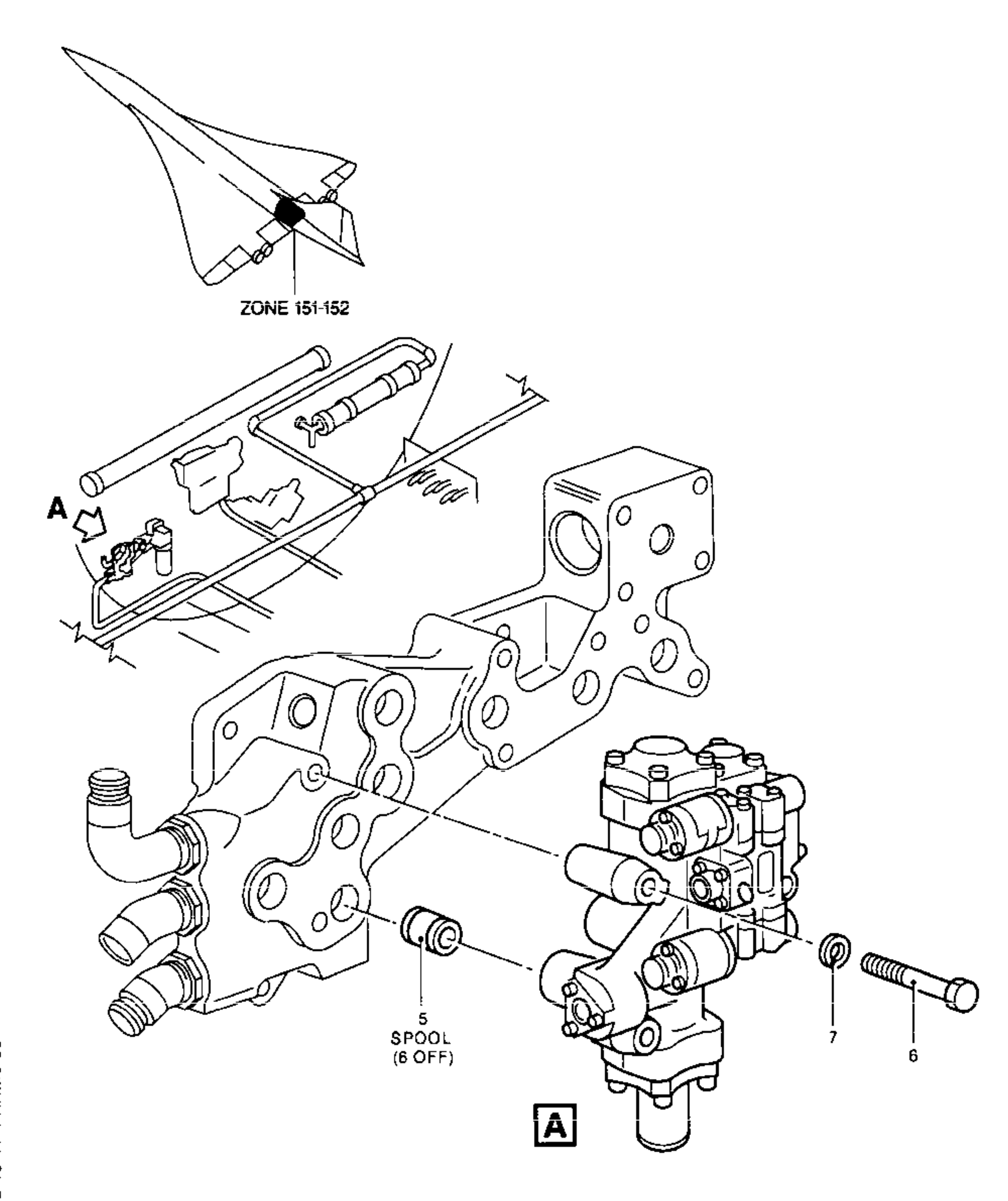
R The O-ring must be installed on the end of the spool marked with a reference groove (Ref. 20-22-16).

E. Install

R (1) Install spools (5) (6 off) with reference groove facing manifold.

(2) Position selector valve and secure with washers (7) and screws (6).

Torque screws (6) to between 0.75 and 0.85 mdaN (66.380 and 75.231 lbf in).
Safety screws (6) with lockwire (Ref. 20-21-13).



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R

Normal Braking Supply Selector Valve
Figure 401

(3) Connect electrical plug.

(4) Remove safety clips and tags and reset circuit breakers.

F. Tests

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Depress Captain's or First Officer's pedals :

- On centre instrument panel, BRAKES FAIL warning light comes on

(3) Release pedals, BRAKES FAIL warning light goes out.

(4) On overhead panel, on SERVO CONTROLS unit, place lower switch in YELLOW GREEN position.

(5) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(6) Pressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(7) Depress Captain's or First Officer's pedals then release :

- On centre instrument panel, BRAKES FAIL warning light remains off.

(8) Shut down Green hydraulic system (Ref. 29-11-00, Servicing). Depress pedals to depressurize Green hydraulic system, hold depressed a moment then release.

- On centre instrument panel, BRAKES FAIL warning light remains off.

(9) Shut down Yellow hydraulic system (Ref. 29-21-00, Servicing). Depress pedals to depressurize Yellow hydraulic system and hold depressed.

- On centre instrument panel, BRAKES FAIL warning light comes on

(10) Release pedals.

(11) During tests, check replaced components for external

leakage.

(12) On overhead panel, on SERVO CONTROLS unit, place lower switch in NORMAL position.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Close access doors.

Printed in England

R HP FILTER - SERVICING

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT WHEELS CHOCKS ARE IN PLACE.

1. General

R The HP filter is located at zone 151-152 forward of the Normal braking supply unit.

Removal of filter bowl together with cartridge element results in closing of both diaphragm and valve. Hydraulic fluid is thus prevented from escaping from the system.

2. Filter Element

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 3.97 m (13 ft.)	
Electrical ground power unit	
Container	
R Lockwire Dia. 0.028 in. (0.70 mm) (Corrosion Resistant Steel)	
Hydraulic Fluid (Ref. 20-30-00, No.011)	
Cleaning Product (Ref. 20-30-00, No.468)	

B. Prepare

Printed in England

(1) Take the precautions described in the previous WARNING paragraph.

(2) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(3) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

C. Remove
R (Ref. Fig.301 and 302)

(1) Cut and remove lockwire.

(2) Unscrew and remove bowl (6) with filter element (5).

(3) Remove filter element from bowl. Filter element shall be discarded.

D. Preparation of Replacement Component

(1) Clean bowl (6) and dry with filtered compressed air.

(2) Make certain that head-to-bowl seal (4), backing ring (3) and filter element seal (1) are undamaged, free from foreign matter and correctly installed. Make certain that element removal spring (2) is correctly located in the base of diaphragm.

R NOTE 1 : If backing ring (3) is replaced proceed as
R indicated on figure below.
R (Ref. Fig. 302)

NOTE 2 : During assembly, the seals must only be lubricated with product No. 011.

(3) Insert filter element (5) into bowl (6).

(4) Fill bowl (6) with pre-filtered Product No.011.

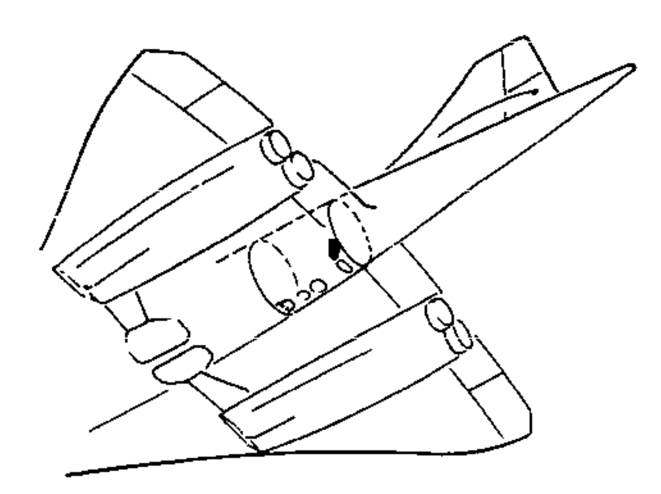
CAUTION : DO NOT FILL THROUGH OPEN END OF FILTER ELEMENT.

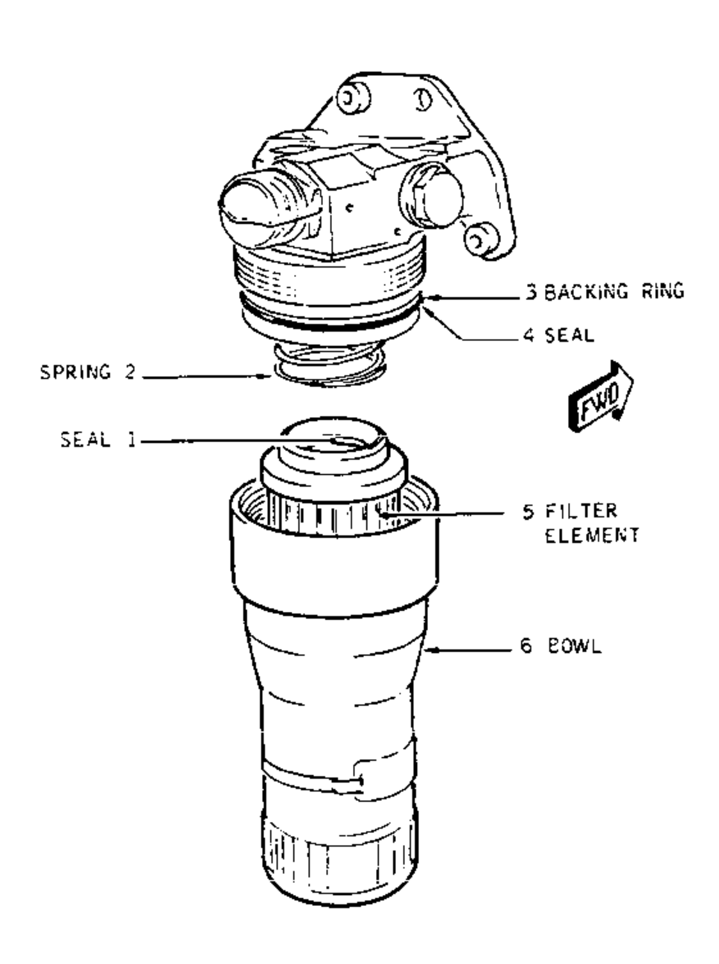
E. Install

(1) Install bowl (6) and filter element (5) on filter body.

(2) Tighten bowl (6) and torque to 40 lbf.in. (0.460 m.daN)

(3) Safety bowl (6) with lockwire (Ref. 20-21-13)



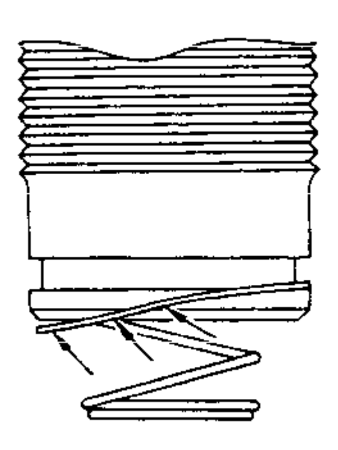


CMA 32 43 42 3 AAMO

R

HP Filter
Figure 301

Printed in England



CMA 32 43 42 3 ACMO

R Backing Ring
Figure 302

F. Test

(1) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R (6) Depress Captain's or First Officer's pedals to second
R load threshold (12° approx.).

(7) Carefully check filter for evidence of external leak-

age.

(8) Release pedals.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make particularly certain that no trace of hydraulic fluid remains.

(2) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Remove access platform.

(5) Close access doors.

HP FILTER - INSPECTION/CHECK

1. General

Check Normal braking HP filter for clogging by means of the clogging indicator.
The indicator is located on the Normal braking HP filter (3610) in the hydraulics bay zone 151.

2. Clogging Indicator

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 3.85 m (12 ft. 6 in.)	

B. Prepare

(1) Open access door 151DB.

C. Procedure (Ref. Fig. 601)

(1) Make certain that clogging indicator red button is not in released position.

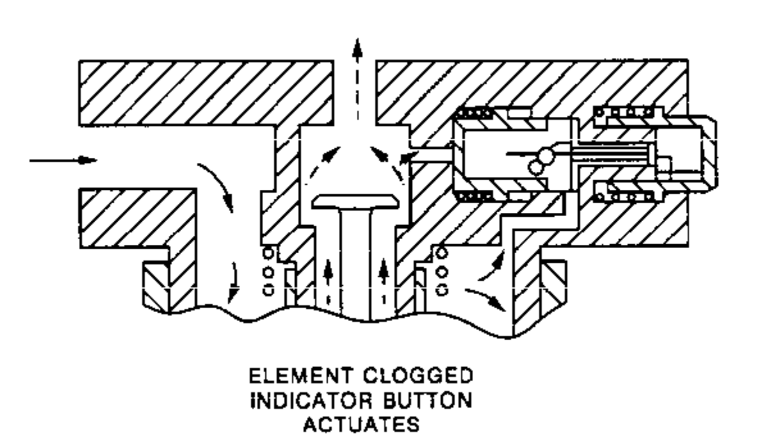
If clogging indicator red button is in released position, replace filter element (Ref. 32-43-42, Servicing)

D. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Close access door and remove access platform.

OUTLET
INLET
CLOGGING INDICATOR BUTTON
PISTON
OUTLET CHECK VALVE
ELEMENT
NORMAL FLOW



ELEMENT CLOGGED
INDICATOR BUTTON
ACTUATES

CMB 32 43 42 6 AAM0 00

R

Clogging Indicator
Figure 601

NORMAL BRAKE LP PRESSURE SWITCH - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The Normal brake LP pressure switch operates, when the pressure in the Green system drops below 2030 psi (140 bars), to illuminate the BRAKES FAIL warning light on the centre instrument panel.

The pressure switch is located in the hydraulics bay, LH side, above the Normal braking HP filter (3610).

2. Pressure Switch

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.85 m (12 ft. 6 in.)	
Circuit Breaker Safety Clips	
Warning Notice	
Lockwire Dia. 0.8 mm (0.032 in.)	

DESCRIPTION	PART NO.
(Corrosion Resistant Steel)	
Container	

B. Prepare

(1) Take the safety precautions described in the previous WARNING paragraph.

(2) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) Depressurize Green hydraulic tank (Ref. 29-13-00, Servicing).

(4) Trip, safety and tag the following circuit breaker

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

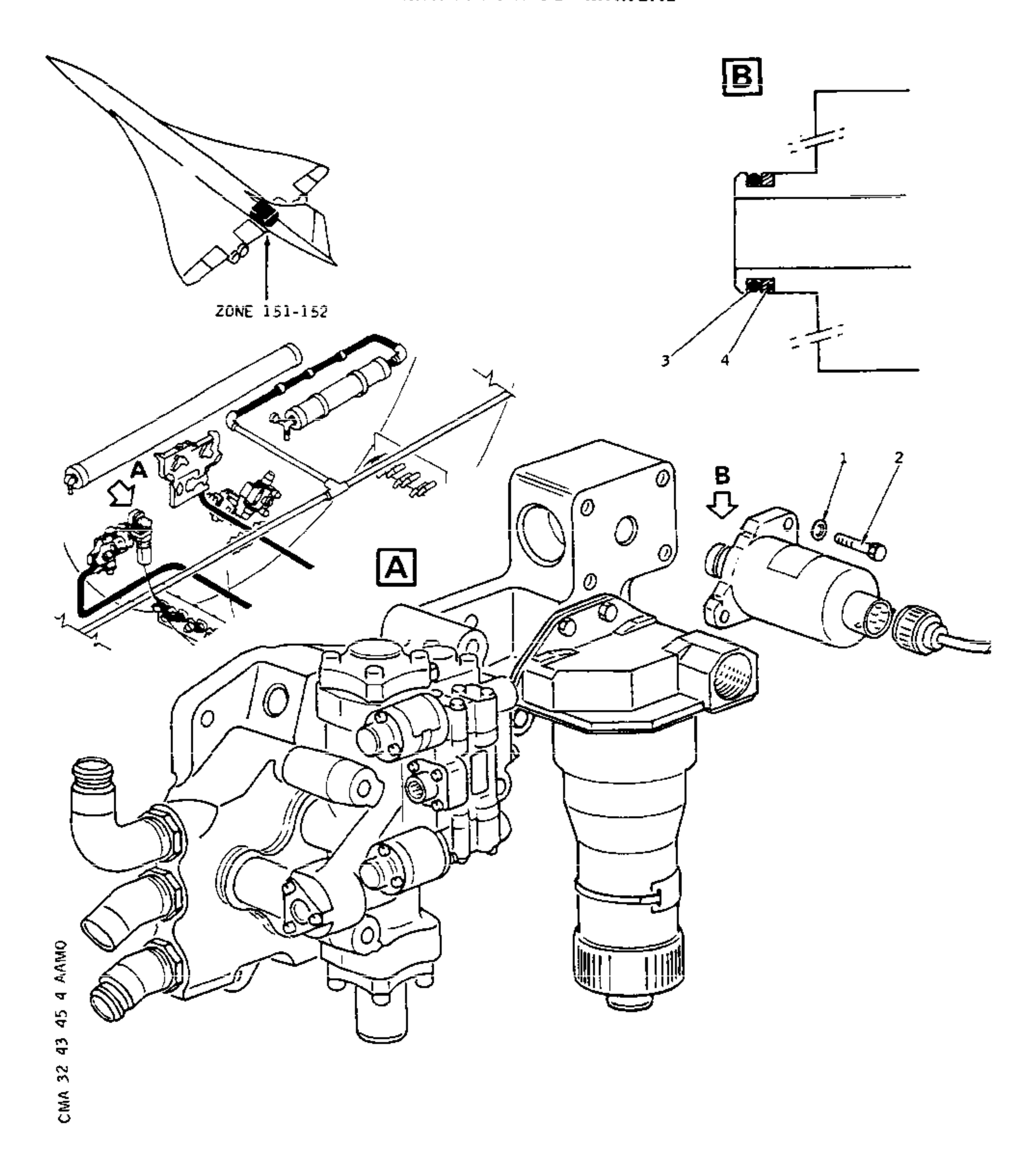
(2) Cut and remove lockwire and remove screws (2), retain washers (1) for reinstallation and remove pressure switch.

D. Preparation of Replacement Component

Make certain that a back-up ring and new O-ring are correctly installed on replacement pressure switch. The O-ring seal must be installed facing the manifold.

E. Install

(1) Position pressure switch and secure with washers (1) and screws (2). Torque screws to between 0.45 and 0.55 m.daN (40 and 49 lbf.in.). Wirelock screws in pairs (Ref. 20-21-13).



Pressure Switch
Figure 401

(2) Connect electrical connector.

(3) Remove safety clip and tag and reset circuit breaker.

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On centre console, make certain that brake selector lever is in NORM position.

(3) Pressurize Green hydraulic tank (Ref. 29-13-00, Servicing).

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Depress pedals
- On centre instrument panel, BRAKES FAIL warning light remains off.

(6) Release pedals.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) Depress pedals
- On centre instrument panel, BRAKES FAIL warning light comes on

(9) Release pedals.

(10) During tests check pressure switch for leakage.

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

R After SB 32-057 For A/C 001-005,

YELLOW PRESSURE SHUT-OFF ELECTROVALVE REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISMS SAFETY DEVICES ARE IN POSITION.

1. General

The Yellow pressure shut-off electrovalve shuts off Yellow pressure from the braking system when the Yellow tank first warning level is reached.
The electrovalve is located in the hydraulics bay; access door 151DB.

2. Yellow Pressure Shut-Off Electrovalve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Access Platform 3.85 m (12 ft. 6 in.)	

DESCRIPTION	PART NO.
Container	
Blanking Plugs/Caps	
Removable Chocks	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(4) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(5) Trip, safety and tag the following circuit breakers:

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	WHEEL BRAKE 'A' SYS CONT O/LOAD IND	1-213	G 131	S16
RB	WHEEL BRAKES TEST IND & SUP	1-213	G9001	S15
	WHEEL BRAKE 'B' SYS CONT	3-213	G 132	D 9
RB	WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6
	PLTS LT TEST SUP	15-215	L1001	E14

(6) Open access door 151DB.

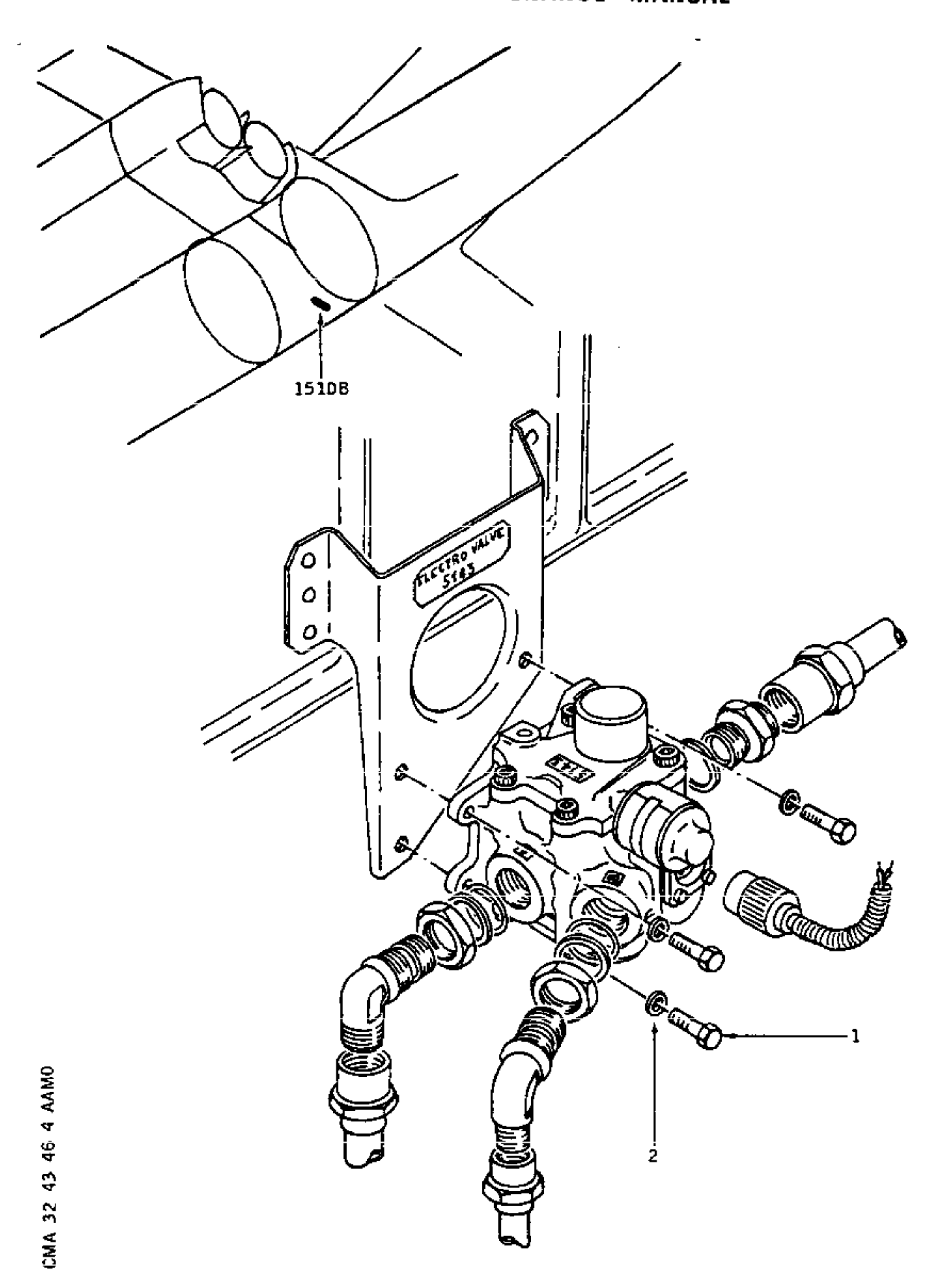
C. Remove

(1) Disconnect and cap electrical connector.

(2) Disconnect hydraulic lines and cap open line ends.

(3) Remove the screws (1) and washers (2).

(4) Remove electrovalve.



Yellow Pressure Shut-Off Electrovalve
Figure 401

D. Preparation of Replacement Component

(1) On removed electrovalve, mark and remove unions.

(2) On replacement electrovalve, install unions with new seals and back-up rings in accordance with marking.

E. Install

(1) Position electrovalve and install with screws (1) and washers (2).

(2) Connect and tighten hydraulic lines.

(3) Connect electrical connector.

F. Test

(1) Perform test of electrovalve (Ref. 32-43-46, Adjustment/Test).

(2) Check replacement electrovalve for external leakage.

G. Close-Up

(1) On centre console, place brake selector lever in PARK position.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain in particular that no trace of hydraulic fluid remains.

(4) Close access door 151DB.

(5) Remove wheel chocks.

R After SB 32-057 For A/C 001-001,003-004,

YELLOW PRESSURE SHUT-OFF ELECTROVALVE - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPONDS WITH THE ACTUAL POSITION OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
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BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISMS SAFETY DEVICES ARE IN POSITION.

1. General

Make certain that Normal braking system operates correctly after replacement of the Yellow pressure shut-off electrovalve.

2. Yellow Pressure Shut-Off Electrovalve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Removable Chocks	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) On centre console, place brake selector lever in NORM position.

(4) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(5) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(6) Check that the following circuit breakers are set:

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G131	S16
RB	WHEEL BRAKES TEST IND & SUP		G9001	S15
	WHEEL BRAKE "B" SYS CONT	3-213	G132	D 9
RB RB	WHEEL BRAKE YELL LL SHUT OFF	15-215	G189	C 6
	PLTS LT TEST SUP	15-215	L1001	E14

(7) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Test

(1) Depress Captain's or First Officer's pedals then release.
On centre instrument panel, BRAKES FAIL warning light comes on when the pedals are depressed and goes off when pedals are released.

(2) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(3) Pressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(4) Depress Captain's or First Officer's pedals then release.
On centre instrument panel, BRAKES FAIL warning light remains off.

(5) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) Depress Captain's or First Officer's pedals several times then hold depressed.
On centre instrument panel BRAKES FAIL warning light remains off.

(7) With pedals depressed, on panel 3-123, connect relay box terminal UT1838-1B to aircraft ground.
On centre instrument panel, BRAKES FAIL warning light comes on.

(8) With pedals depressed, on panel 3-123, disconnect relay box terminal UT1838-1B from aircraft ground.
On centre instrument panel, BRAKES FAIL warning light goes off.

(9) Release pedals.
On centre instrument panel, BRAKES FAIL warning light remains off.

(10) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(11) Depress Captain's or First Officer's pedals several times then hold depressed.
On centre instrument panel, BRAKES FAIL warning light comes on.

(12) Release pedals.

D. Close-Up

(1) On centre console, place brake selector lever in PARK position.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Remove wheel chocks.

WHEEL OVERHEAT INDICATING AMPLIFIER - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The wheel overheat indicating amplifier amplifies signals received from the temperature sensors and transmits the amplified signal to the BRAKES TEMP indicator (G341). The amplifier is located in electronics rack 2-215.

2. Amplifier

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8
WHEEL O/HEAT IND	15-215	G 335	F 7

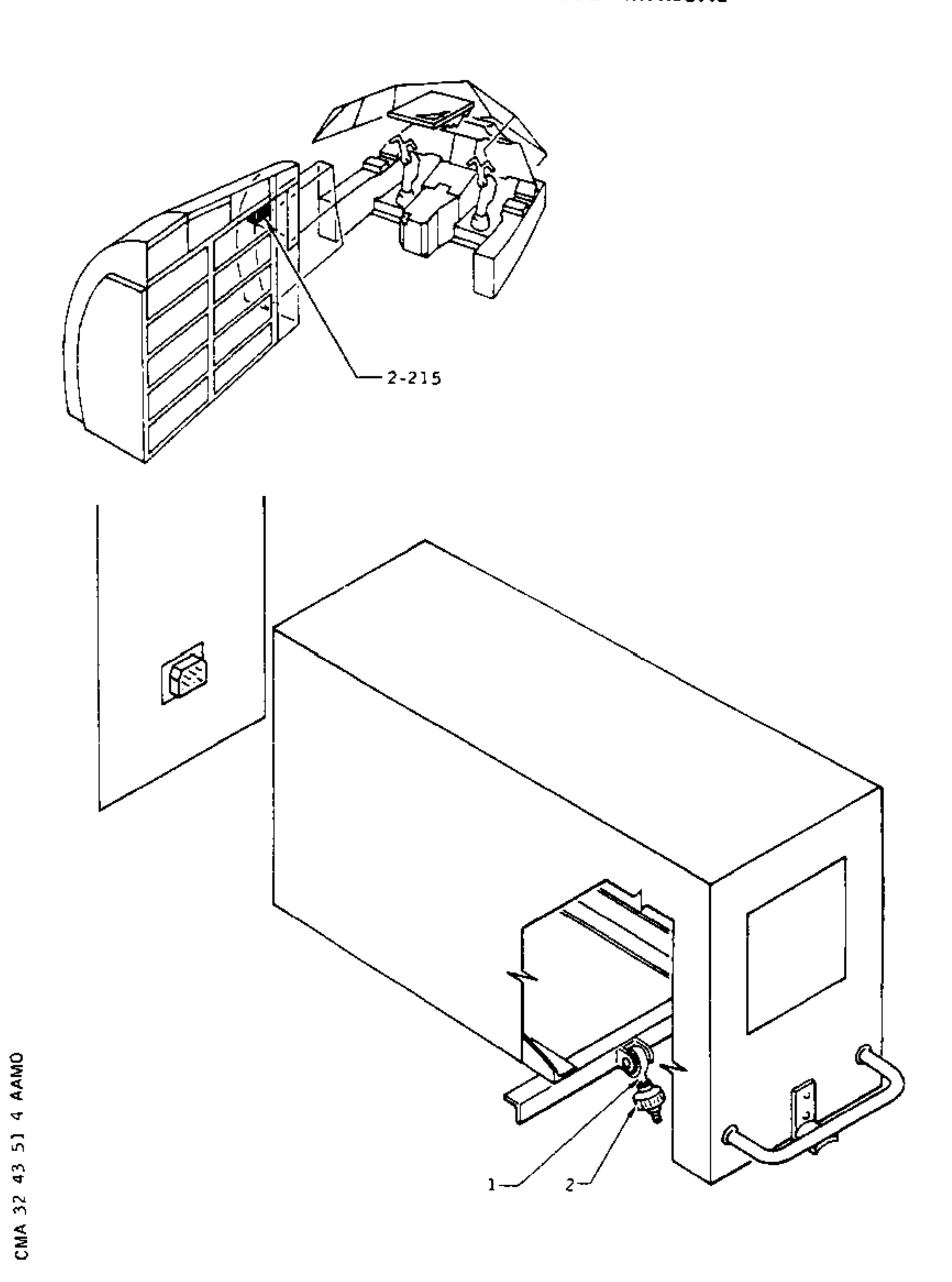
C. Remove (Ref. Fig. 401)

R (1) Remove access panel 215CS.

R (2) Unscrew knurled nut (2) and disengage amplifier attach fitting (1).

R (3) Slowly disengage amplifier from its support and remove amplifier.

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CMA 32 43 51 4 AAMO

Wheel Overheat Indicating Amplifier
Figure 401

RB (4) Examine rack and unit connectors for:

RB (a) Bent, damaged or corroded contact pins.

RB (b) Distorted, displaced or blackened socket
RB contacts.

RB (c) Pierced, or otherwise damaged dielectric.

RB (d) Connector body free from damaged polarizing posts
RB and keyways.

RB NOTE: If connector is damaged refer to WDM 20-42-71.

R D. Install

RB (1) Examine unit connector for:

RB (a) Bent, damaged or corroded contact pins.

RB (b) Distorted, displaced or blackened socket
RB contacts.

RB (c) Pierced, or otherwise damaged dielectric.

RB (d) Connector body free from damaged polarizing posts
RB and keyways.

RB NOTE: If connector is damaged refer to WDM 20-42-71.

RB (2) Position amplifier on its support and slide fully home.

(3) Position attach fitting (1) and tighten knurled nut (2).

(4) Remove safety clips and tags and reset circuit breakers.

R E. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On 3CM panel, on BRAKES TEMP indicator, press and hold TEST button:

- The eight red lights on BRAKES TEMP indicator come on

- The temperature indicator on BRAKES TEMP indicator reads 280 deg. C. approx.
- On First Officer's instrument panel, WHEELS O/HEAT warning light comes on.

(3) Release the TEST button.

R F. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Close access panel 215CS.

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BRAKES TEMPERATURE INDICATOR - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The BRAKES TEMP indicator enables the flight crew to know the temperature of each brake unit at any given moment. The BRAKES TEMP indicator displays the temperature of the hottest brake unit when the eight integral-light pushbuttons are released. The indicator is located on Flight Engineer's panel 12-214.

2. Indicator

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Trip, safety and tag the following circuit breakers :

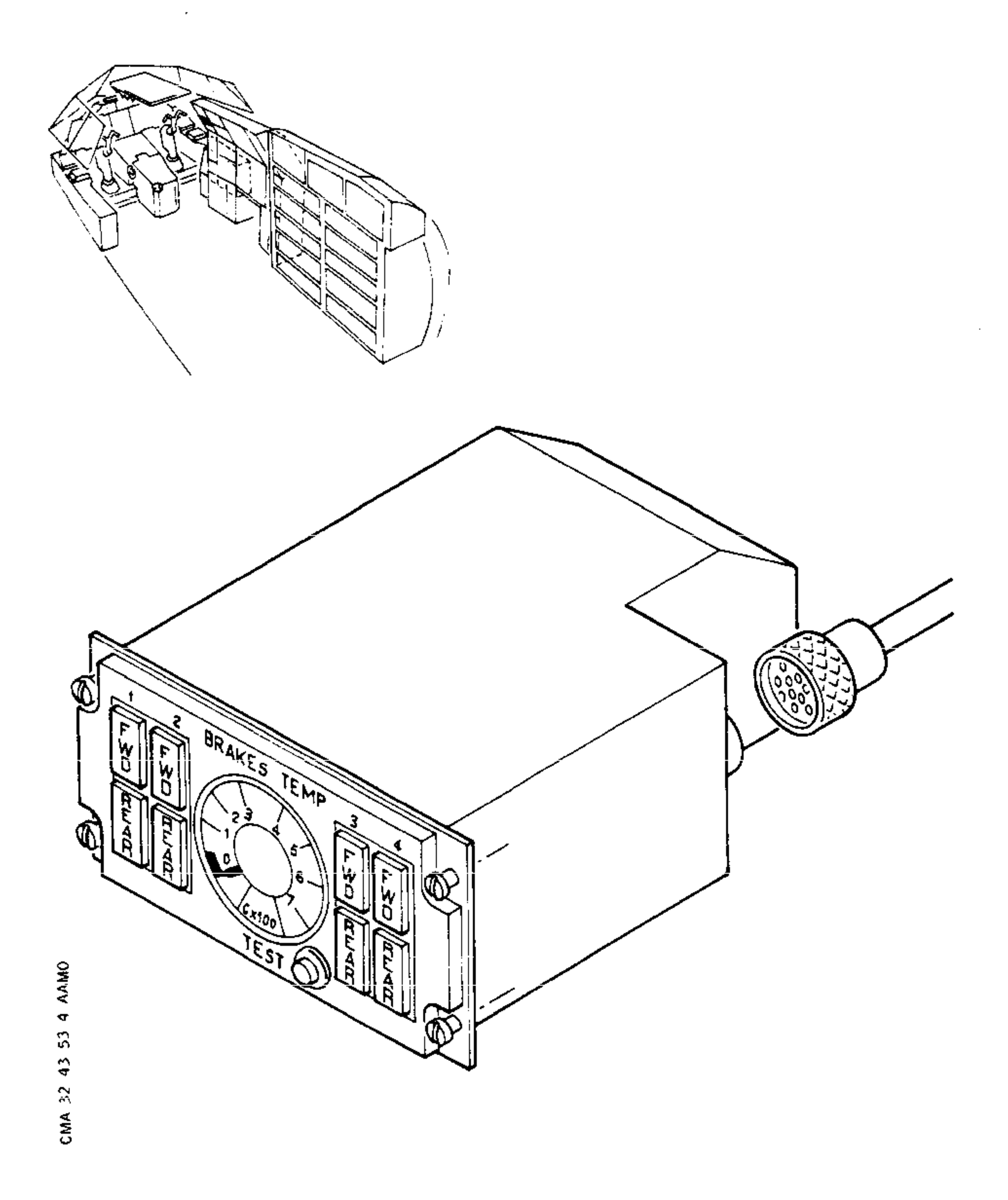
SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL O/HEAT DETECT SUP	13-215	G 334	C 8
WHEEL O/HEAT IND	15-215	G 335	F 7

C. Remove (Ref. Fig. 401)

(1) Release Dzus fasteners and withdraw indicator from instrument panel.

(2) Disconnect and cap electrical plug.

D. Preparation of Replacement Component



BRAKES TEMP Indicator
Figure 401

Not applicable.

E. Install

(1) Connect electrical plug to indicator.

(2) Position indicator in instrument panel and secure with Dzus fasteners.

(3) Remove safety clips and tags and reset circuit breakers

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On BRAKES TEMP indicator, press and hold TEST button.

- The eight red lights come on
- The temperature indicator reads 280° C approx.
- On First Officer's instrument panel, WHEELS O/HEAT warning light comes on.

(3) Release TEST button.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Close access doors.

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MAGNETIC INDICATOR - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The BRAKES OVERLOAD magnetic indicator indicates excess torque on one or more brakes.
BRAKES OVERLOAD magnetic indicator is located on Flight Engineer's panel 12-214.

2. Magnetic Indicator

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	

B. Prepare

(1) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R	REAR OUTER WHEELS BRAKE CONT		G 183	S17
R	FWD OUTER WHEELS BRAKE CONT		G 184	S18
R	WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
R	WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
R	REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
R	FWD INNER WHEELS BRAKE CONT		G 182	C10
R	WHEEL BRAKE "B" SYS CONT		G 132	D 9

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
RB WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6
RB WHEEL BRAKES TEST IND & SUP	1-213	G 9001	S15

(2) Release quick attach-detach fasteners and open panel 12-214.

C. Remove (Ref. Fig. 401)

(1) If necessary remove cable ties to facilitate access to terminals.

(2) Disconnect electrical wiring from terminals using appropriate insertion/extraction tool.

(3) Remove nut (1), retain washer (2) for reinstallation and withdraw magnetic indicator from rear of panel.

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Position magnetic indicator and secure with washer (2) and nut (1).

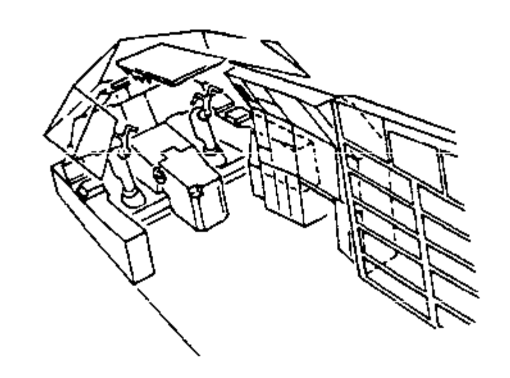
(2) Connect magnetic indicator electrical wiring in accordance with wiring identification and applicable wiring diagram.

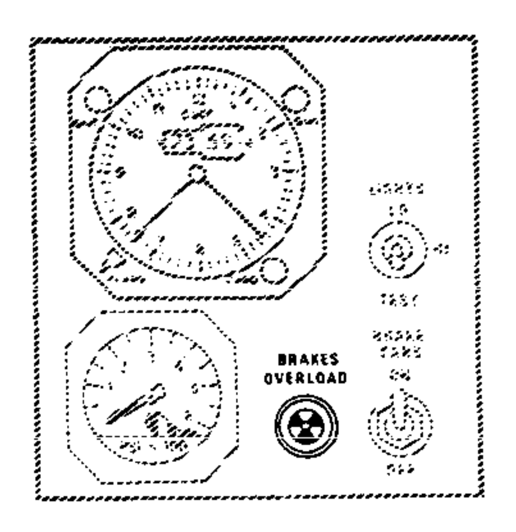
(3) Install cable ties as necessary.

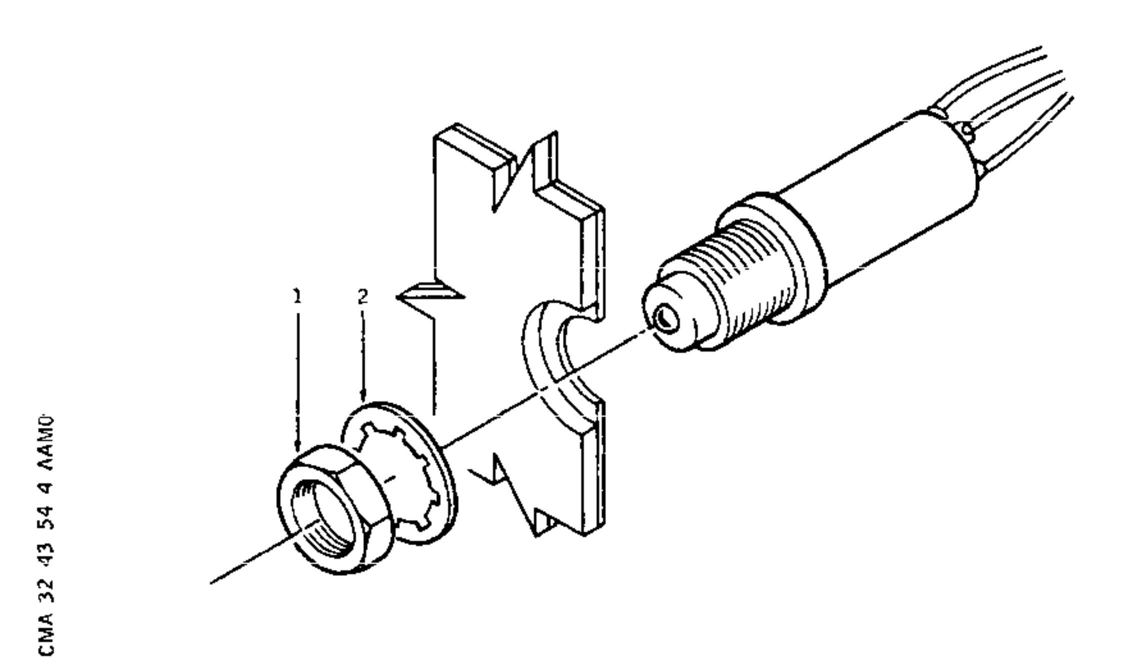
(4) Close and secure panel making certain that electrical cables are correctly positioned.

F. Test

(1) Remove safety clips and tags and reset circuit breakers







Magnetic Indicator
Figure 401

(2) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) In electronics rack 9-215, on brakes overload control unit, simultaneously press OVERLOAD and TEST pushbuttons. BRAKES OVERLOAD magnetic indicator shows "white".

(4) Press RESET pushbutton. BRAKES OVERLOAD magnetic indicator shows "black".

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

BRAKE ANTI-SKID AND NOSEWHEEL STEERING TEST INDICATOR REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHAMISM SAFETY DEVICES ARE IN POSITION.

1. General

The test indicator consists of two parts ; one provides visual functional check of nosewheel steering, the other provides visual functional check of anti-skid braking.

2. Test Indicator

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) Make certain that the aircraft electrical network is de-energized.

(2) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R R	REAR OUTER WHEELS BRAKE CONT		G 183	S17
R R	FWD OUTER WHEELS BRAKE CONT		G 184	S18

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
NOSE WHEEL STEERING IND	15-215	G 92	B 6
WHEEL BRAKES TEST IND & SUP		G 198	C 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

C. Remove (Ref. Fig. 401)

(1) Remove screws (1).

(2) Remove test indicator from instrument panel and disconnect electrical plug.

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Connect electrical plug and install test indicator.

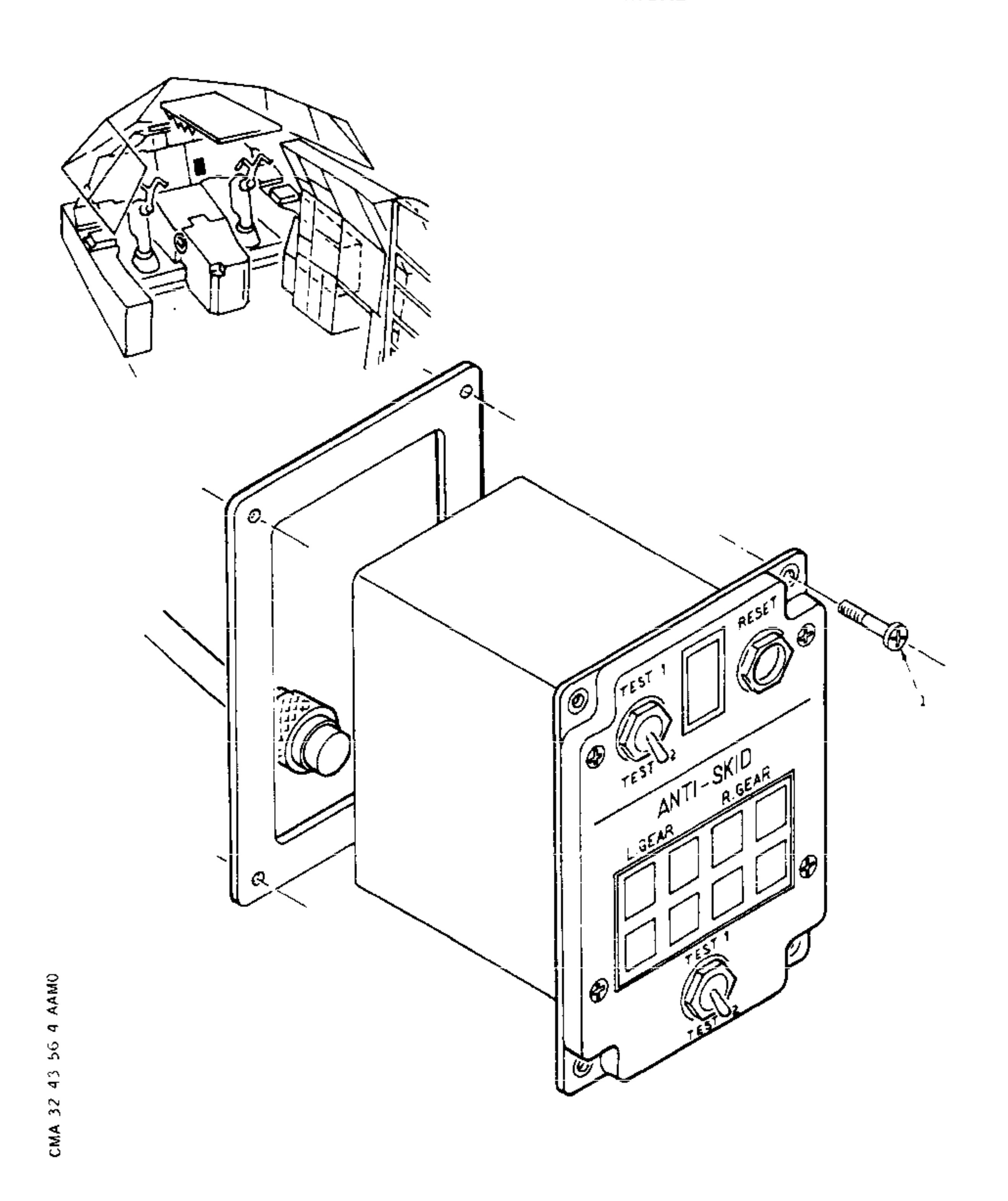
(2) Secure test indicator with screws (1).

(3) Remove safety clips and tags and reset circuit breakers

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

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Test Indicator
Figure 401

(2) On replacement test indicator place ANTI-SKID TEST 1/TEST 2 switch in TEST 1 position then release.

- The eight R lights come on during pulse in TEST 1 position.

(3) Place ANTI-SKID TEST 1/TEST 2 switch in TEST 2 position then release.

- The eight R lights come on during pulse in TEST 2 position.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

BRAKES OVERLOAD CONTROL UNIT - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The brakes overload control unit serves to control braking torque with respect to a reference torque which is function of pedal travel.
The brakes overload control unit is located in electronics rack 9-215.

2. Brakes Overload Control Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) On centre console, make certain that brake selector lever is in NORM position.

(2) Make certain that the aircraft electrical network is de-energized.

(3) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT	1-213	G 131	S16
R	O/LOAD IND			
R	REAR OUTER WHEELS BRAKE CONT		G 183	S17
R	FWD OUTER WHEELS BRAKE CONT		G 184	S18
R				
R	WHEELS 5 8 A/SKID & ADAPT	2-213	G 185	A15
R	AMPS SUP			
R	WHEELS 6 7 A/SKID & ADAPT		G 188	G15
R	AMPS SUP			

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SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10

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(4) In zone 215, remove access panel 215DS.

C. Remove (Ref. Fig. 401)

(1) Unscrew knurled nuts (2) and disengage control unit attach fittings (1).

(2) Slowly disengage control unit from its support and remove.

RB (3) Examine rack and unit connectors for:

RB (a) Bent, damaged or corroded contact pins.

RB (b) Distorted, displaced or blackened socket
RB contacts.

RB (c) Pierced, or otherwise damaged dielectric.

RB (d) Connector body free from damaged polarising posts
RB and keyways.

RB NOTE: If connector is damaged refer to WDM 20-42-71.

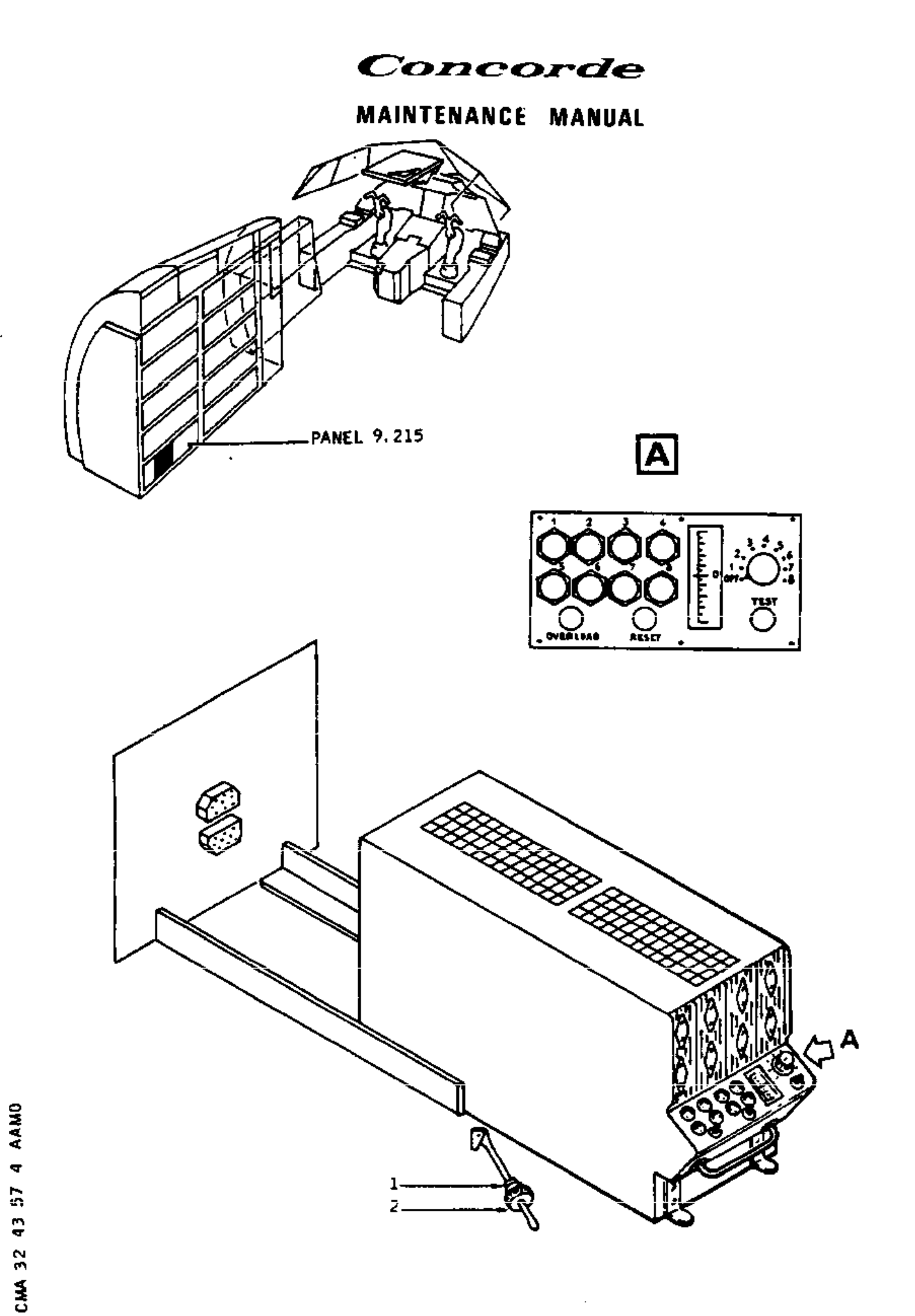
R D. Install

RB (1) Examine unit connector for:

RB (a) Bent, damaged or corroded contact pins.

RB (b) Distorted, displaced or blackened socket
RB contacts.

RB (c) Pierced, or otherwise damaged dielectric.



Brakes Overload Control Unit
Figure 401

RB (d) Connector body free from damaged polarising posts
RB and keyways.

RB NOTE: If connector is damaged refer to WDM 20-42-71.

(2) Position control unit on its support and slide fully home.

(3) Position attach fittings (1) and tighten knurled nuts (2).

(4) Remove safety clips and tags and reset circuit breakers.

R E. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On brake overload control unit, simultaneously press OVERLOAD and TEST pushbuttons.

(a) On brakes overload control unit, the eight magnetic indicators show "white".

(b) On 3CM panel 12-214, BRAKES OVER-LOAD magnetic indicator shows "white".

(3) On brakes overload control unit, press RESET pushbutton.

(a) On brakes overload control unit, the eight magnetic indicators show "black".

(b) On 3CM panel 12-214, BRAKES OVER-LOAD magnetic indicator shows "black".

(4) Using the rotary selector on the brakes overload control unit, check that the galvonmeter reading for each of the eight brake rod strain gauges, shows a drift reading from zero, not in excess of plus or minus 450mV.

NOTE: It is a CAA MANDATORY for the above test to be carried out at periods called for in the Concorde Maintenance Schedule Ref. 32.43-041M.

The mV reading should be recorded on Worksheets. Any significant deviation, (i.e. more than 2 divisions), should be brought to Developments attention.

(5) If strain gauge reading is outside the limits of plus or minus 450mV or the overload indication does not function correctly,

(a) Check for faults in accordance with Chapter 32-43-00, Normal Braking - Trouble Shooting.

(b) Check wheel for freedom of rotation and then with wheel removed, check exposed surfaces of heat sink for damage and cracks, in accordance with 32-42-11.

R F. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Install access panel 215DS.

SLIDING TUBES - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Sliding tubes deliver hydraulic pressure to the brakes and compensate for shock absorber shortening during landing gear retraction. The sliding tubes are mounted on the lower part of the shock absorber and slide in a guide attached to the landing gear leg.

R After SB 32-080 For A/C 001-007,

R 1. General

R Sliding tube delivers hydraulic pressure to the brake and
R compensates for shock absorber shortening during landing gear
R retraction. The sliding tube is mounted on the lower part of
R the shock absorber and slides in a guide attached to the
R landing gear leg.
R A second sliding tube assembly (Normal and Emergency lines)
R is covered under Emergency braking.

2. Sliding Tubes

A. Equipment and Materials

DESCRIPTION	PART NO.
Removable Chocks	
Container	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	
Circuit Breaker Safety Clips	
Common Grease (Ref. 20-30-00, No.051)	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) Position wheel chocks.

(3) On First Officer's instrument pqnel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(5) On centre console, make certain that brake selector lever is in NORM position.

(6) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R	WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
R	HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.

DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.

IF A GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS

(7) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(8) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(9) Remove protective cover from lower part of sliding tube.

C. Remove

(1) On the upper part of the sliding tube :

(a) Disconnect hydraulic delivery and return lines.

(b) Cap open line ends, and ports on sliding tube.

(2) On the lower part of the sliding tube :

(a) Disconnect delivery and return lines.

(b) Remove nuts (11) and retain flange (10) for reinstallation.

(c) Remove bolts (6).

(3) On the upper guide :

(a) Remove nuts (5).

(b) Fold back tab washer (2) and remove bolt (1).

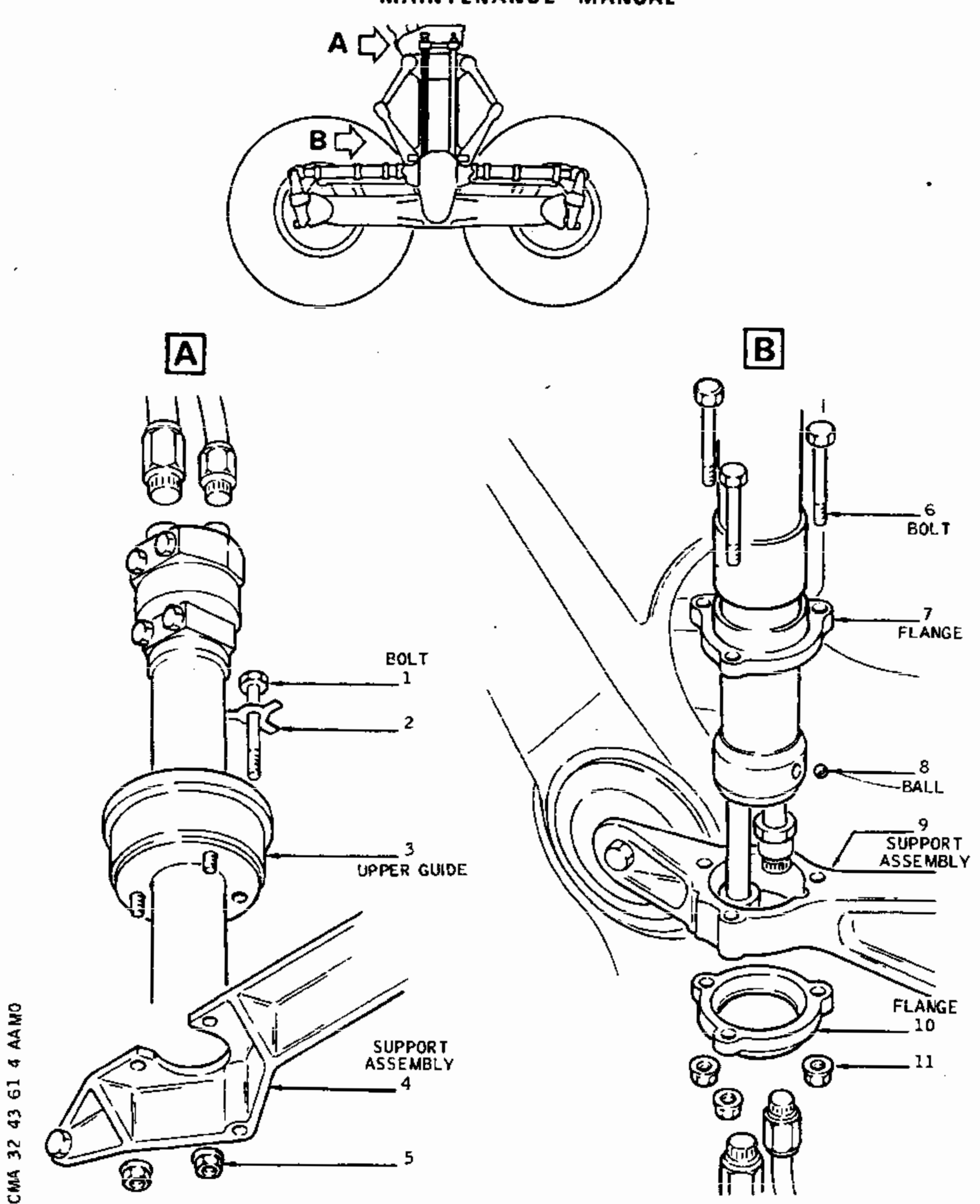
(c) Remove guide (3) from support assembly (4).

(4) Remove sliding tube.

(a) Retain ball (8) on lower part of tube.

(5) Cap open line ends, and ports on lower part of sliding tube.

D. Preparation of Replacement Component



Sliding Tube - Normal Brake
Figure 401

Not applicable.

E. Install

(1) Remove blanking caps from delivery and return lines.

(2) On lower part of sliding tube :

(a) Remove blanking caps.

(b) Install sliding tube in its housing.

(c) Position tube, and insert ball (8).

(d) Position flange (7) and secure support assembly (9) and flanges (7) and (10) with bolts (6) and nuts (11).

- Tighten nuts (11).

(3) On the upper part of the sliding tube :

(a) Position guide (3) on support assembly (4).

(b) Install bolt (1) with lock washer (2).

(c) Tighten bolt (1) and nuts (5).

(d) Fold back tab washer (2) against bolt (1) head.

(4) Connect hydraulic delivery and return lines to lower part of sliding tube.

(5) On the upper part of sliding tube :

(a) Remove blanking caps.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE.

IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(b) Connect delivery and return lines.

NOTE : It is essential that the hydraulic lines pass through the harness.

(6) Grease sliding tube with Product No.051.
(Ref. 12-22-32).

(7) Remove safety clips and tags, reset circuit breakers.

(8) Pressurize Green and Yellow hydraulic tanks
(Ref. 29-13-00, Servicing).

F. Test

Bleed the brakes (Ref. 32-43-00, Servicing).
During bleeding operation, check hydraulic lines for leakage.

G. Close-Up

(1) If necessary, replenish Green and Yellow hydraulic tanks (Ref. 12-12-29).

(2) Close access doors.

(3) Remove container.

(4) Install protective cover on lower part of sliding tube. Safety screws with lockwire (Ref. 20-21-13).

(5) Remove warning notices.

SERVO-VALVE - REMOVAL/INSTALLATION

R WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED
R ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH
R THE ACTUAL POSITION OF THE LANDING GEAR.

R BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

R

1. General

Each landing gear leg is fitted with four servo-valves.
R During Normal operation each servo-valve delivers hydraulic pressure to the brake unit to which it is connected.
As the servo-valves are identical only one removal is dealt with in this topic.

2. Servo-Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Wheel Chocks	
Blanking Plugs/Caps	
Circuit Breaker Safety Clips	
R Lockwire - 0.80 mm (0.032 in.) R (Corrosion Resistant Steel)	

R

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

R (2) Depressurize Green and Yellow hydraulic systems
R (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(3) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(4) Trip, safety and tag the following circuit breakers :

(a) For servo-valves (G197) and (G205), LH and RH forward outer wheels.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
FWD OUTER WHEELS BRAKE CONT		G 184	S18
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
WHEELS 1 4 A/SKID & ADAPT AMPS SUP	4-213	G 186	F10
WHEEL BRAKE 'B' SYS CONT	15-216	G 132	B18

(b) For servo-valves (G196) and (G204), LH and RH forward inner wheels.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
FWD INNER WHEELS BRAKE CONT		G 182	C10
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10

(c) For servo-valves (G198) and (G206), LH and RH aft outer wheels.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
REAR OUTER WHEELS BRAKE CONT		G 183	S17
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
WHEEL BRAKE "B" SYS CONT	15-216	G 132	B18

(d) For servo-valves (G199) and (G207), LH and RH aft inner wheels.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
WHEELS 6 7 A/SKID & AMPS SUP	2-213	G 188	G15
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
REAR INNER WHEELS BRAKE CONT		G 181	C 9

(5) Remove the protective casing to gain access to the servo-valve to be removed.

C. Remove
(Ref. Fig. 401)

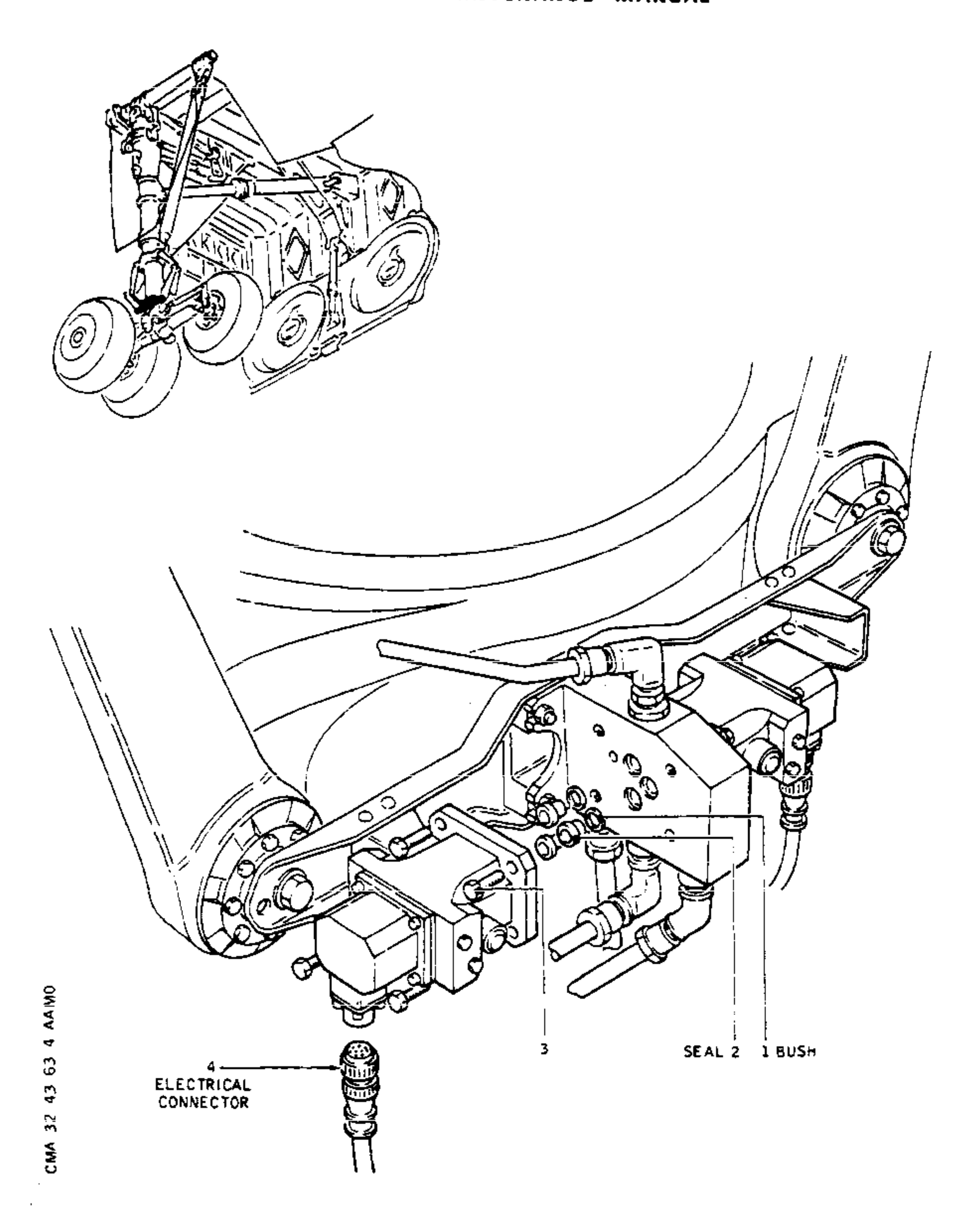
R (1) Ensure that area around the servo-valve is clean and free from loose debris in order to guard against contamination of the servo-valve orifices.

R (2) Cut and remove lockwire, disconnect electrical connector (4) from servo-valve and cap connector.

R (3) Cut and remove lockwire, remove screws (3) attaching the servo-valve.

R CAUTION: CARE MUST BE TAKEN TO PREVENT CONTAMINATION THROUGH SERVO-VALVE ORIFICES IN BASE PLATE.

R (4) Remove servo-valve. Blank off the ports on base plate.



R

Servo-Valve
Figure 401

R (5) Discard seals (1) and bushes (2).

D. Preparation of Replacement Component

R R CAUTION: CARE MUST BE TAKEN TO PREVENT CONTAMINATION THROUGH SERVO-VALVE ORIFICES.

R R NOTE: The replacement servo-valve is filled with Product No.011 (Ref. 20-30-00) and fitted with a blanking plate. Do not remove the blanking plate until immediately prior to installation.

(1) Remove blanking plate.

(2) Make certain that replacement servo-valve is fitted with new seals (2) and bushes (1).

E. Install

(1) Remove blanking caps from base plate.

R R R (2) Clean the contact surfaces on the servo-valve and base plate with Product No.468 (Ref. 20-30-00) and dry with low pressure filtered compressed air.

R (3) Offer up and install servo-valve on base plate with centring pin correctly positioned.

R (4) Attach servo-valve by means of screws (3). Tighten screws (3) and safety with lockwire (Ref. 20-21-13).

R (5) Remove protective cap and connect electrical connector (4) to servo-valve and safety with lockwire (Ref. 20-21-13).

R (6) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

R (7) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

R (8) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

R (9) Bleed the Normal brake system (Ref. 32-43-00, Servicing).

F. Test

(1) Carry out a functional test of the servo-valve (Ref. 32-43-63, Adjustment/Test).

(2) On completion of test check servo-valve for leakage.

G. Close-Up

(1) Install the protective casing providing access to the servo-valve.

(2) Close access doors.

SERVO-VALVE - ADJUSTMENT/TEST

R WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON
R THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE
R ACTUAL POSITION OF THE LANDING GEAR.

R BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT DOOR TRAVEL RANGES OF CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT WHEELS ARE CHOCKED.

1. General

R The object is to make certain that the servo-valve operates correctly after replacement.

2. Servo-Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Removable Chocks	
R Lockwire Dia. 0.80 mm (0.032 in.)	
R (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

R (2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

R (3) On centre console, check that brake selector lever is
R in NORM position.

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(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Check that the following circuit breakers are set:

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
	LH UC WEIGHT SW "A" SYS		G 292	M17
RB	WHEEL BRAKES TEST IND & SUP		G9001	S15
	WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
	REAR OUTER WHEELS BRAKE CONT		G 183	S17
	FWD OUTER WHEELS BRAKE CONT		G 184	S18
	WHEELS 5 & 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
	WHEELS 6 & 7 A/SKID & ADAPT AMPS SUP		G 188	G15
	REAR INNER WHEELS BRAKE CONT	3-213	G 181	C 9
	FWD INNER WHEELS BRAKE CONT		G 182	C10
	WHEEL BRAKE "B" SYS CONT		G 132	D 9
	WHEELS 2 & 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
	WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP		G 186	F10
RB	WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6

(6) Remove protective cover from servo-valve to be checked.

C. Test

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

R (3) Depress pedal associated with servo-valve to be
R checked.

(a) Check that discs on associated brake unit are effectively clamped.

R (b) On First Officer's instrument panel, R lights on
R brake ANTI-SKID test indicator are extinguished.

(c) Check that there is no leakage of fluid at servo-valve.

R (4) Hold pedal in depressed position.

(5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-123	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17

(a) Check, on brake unit, that the discs are released.

R (b) On First Officer's instrument panel, R lights on
R brake ANTI-SKID test indicator are illuminated.

R (6) Remove safety clips and tags, and reset circuit breakers.

(a) Check on brake unit that discs are effectively clamped.

R (b) On First Officer's instrument panel, R lights on
R brake ANTI-SKID test indicator extinguish.

R (7) Release pedal.

D. Close-Up

R (1) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

R (2) Shut down and depressurize Green hydraulic system
R (Ref. 29-11-00, Servicing).

(3) De-energize the aircraft electrical network and dis-

connect electrical ground power unit.

(4) Install protective cover providing access to servo-
R valve. Safety screws with lockwire (Ref. 20-21-13).

BOGIE BEAM SWIVEL COUPLING - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT WHEELS ARE CHOCKED.

1. General

Two swivel couplings mounted in the bogie beam shaft, connect the base of the shock absorber to the bogie beam.
As the swivel couplings are identical only one removal/installation is described in this topic.

2. Bogie Beam Swivel Coupling

A. Equipment and Materials

DESCRIPTION	PART NO.
Container	
Lockwire, Dia. 0.80 mm (0.032 in.) (corrosion Resistant Steel)	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On centre console, make certain that brake selector lever is in NORM position.

(3) Check, on centre instrument panel, that pressure at

brake units is zero.

WARNING : DISPLAY A WARNING NOTICE IN FLIGHT COMPARTMENT PROHIBITING OPERATION OF BRAKES.

(4) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R	WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9

(5) Depressurize Green and Yellow systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(6) Depressurize Green and Yellow hydraulic system tanks. (Ref. 29-13-00, Servicing).

(7) Remove bogie beam side shroud. Retain attaching screws and wahsers for reinstallation.

(8) Remove centre deflector (Ref. 32-11-13, Removal/ Installation).

C. Remove (Ref. Fig. 401)

(1) On swivel coupling, remove the four drive plate (5) securing screws (3), retain washers (4) for reinstallation.

(2) On drive plate (5) remove the two screws (6), retain washers (7) for reinstallation, then remove drive plate (5).

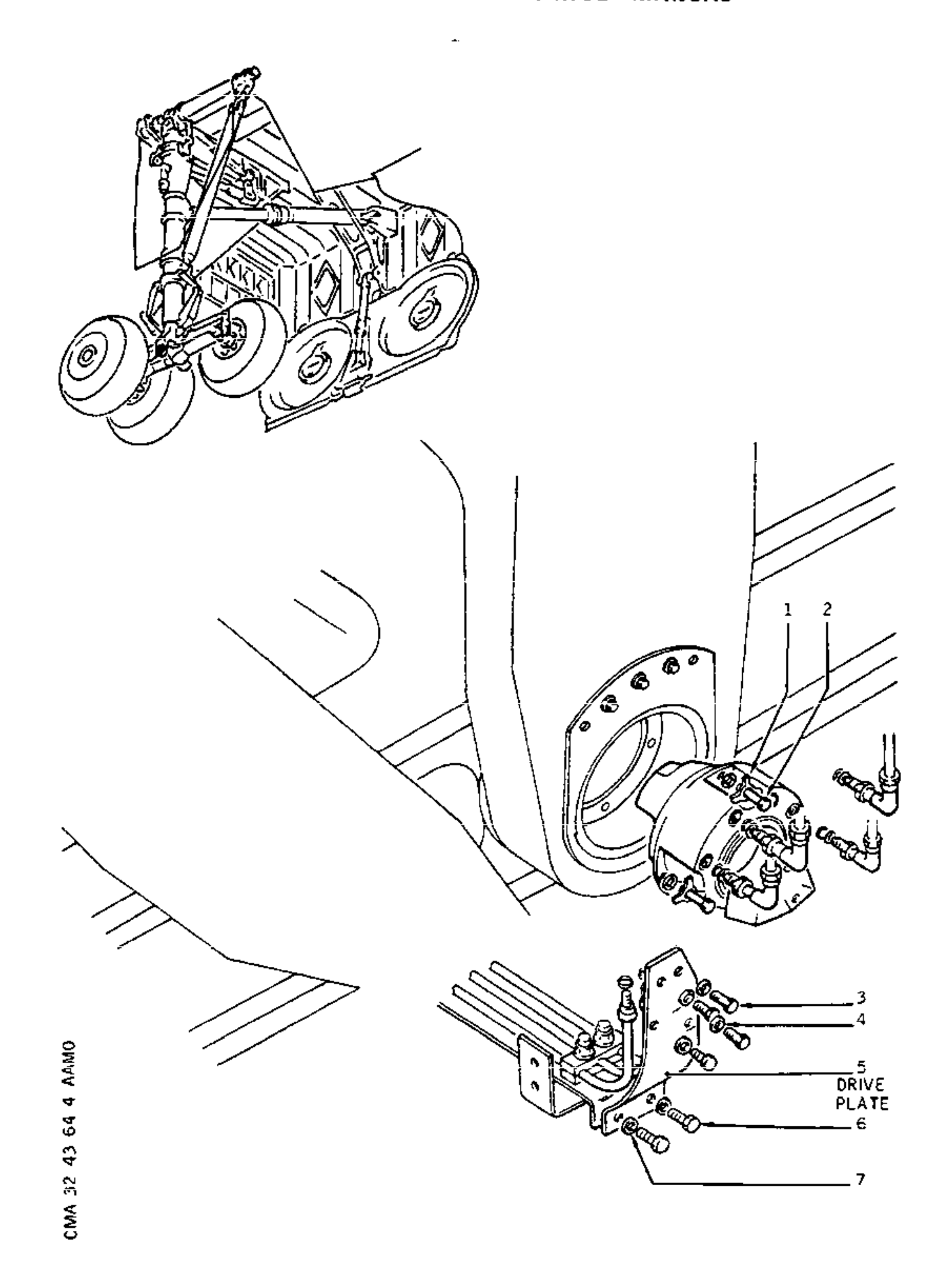
(3) Remove hydraulic lines from swivel coupling.

(4) Cut lockwire and remove screws (2) fitted with lock plates (1). Discard lock plates.

(5) Remove swivel coupling.

D. Preparation of Replacement Component

NOTE : The replacement swivel coupling is fitted with blanking plugs, which must only be removed if Emer-



Bogie Beam Swivel Coupling
R Figure 401

gency braking system unions are to be installed.

(1) On swivel coupling, remove the straight and elbow unions.

(2) On straight unions, discard and replace O-ring seals by new ones.
On elbow unions, discard and replace O-ring seals and gaskets by new ones.

(3) Fit straight and elbow unions to replacement swivel coupling.

(4) Do not lock elbow union locknuts at this stage.

E. Install

(1) Position swivel coupling in its housing on the bogie beam.

NOTE : The swivel coupling can rotate in an arc of ± 20°, which is indicated on a white painted band on the moving body. An index marked on the fixed body enables the travel of the swivel coupling to be checked. When installing the swivel coupling make certain that the index range is within the white band.

(2) Install new lock plates (1) and screws (2). Lock screws (2).

(3) Position elbow unions.

(4) Connect hydraulic lines.

(5) Lock elbow union locknuts.

(6) Position drive plate, install washers (7) and screws (6). Wirelock screws (6) (Ref. 20-21-13).

(7) On swivel coupling install washers (4) and screws (3). Wirelock screws (3) (Ref. 20-21-13).

(8) Remove safety clips and tags, and reset circuit breakers.

(9) Pressurize Green and Yellow hydraulic Tanks (Ref.29-13-00, Servicing).

(10) Bleed Normal braking system (Ref. 32-43-00, Servicing).

R R (11) Bleed Emergency braking system (Ref. 32-44-00, Servicing).

F. Test

R After bleeding of Normal and Emergency braking systems, carefully check swivel coupling for leakage.

G. Close-Up

R (1) Replenish Green and Yellow hydraulic tanks as required (Ref.12-12-29).

R R (2) Install centre deflector (Ref. 32-11-13, Removal/ Installation).

R R (3) Install side shrouds on bogie beam. Safety screws with lockwire (Ref. 20-21-13).

R (4) Remove container.

R (5) Close access doors.

R (6) Remove warning notice from flight compartment.

SAFETY VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Four base plates are installed on each main landing gear under and to either side of the bogie beam at the level of the axles.
A safety valve is installed on each of the base plates.
Each safety valve is installed upstream of a brake unit and serves to isolate the Normal braking system in the event of leakage downstream.
Sealing between the base plate and the safety valve is achieved by spools.
The servo valves being identical a typical removal/installation is described in this topic.

2. Safety Valve 4198 4200 4222 4224 (4199, 4201, 4223, 4225).

A. Equipment and Materials

DESCRIPTION	PART NO.
Wheel Chocks	
Hydraulic Fluid Recovery Container	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel).	
Blanking Plugs	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(5) On centre console, make certain that brake selector lever is in NORM position.

(6) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE A SYS CONT O/LOAD IND	1-213	G 131	S16
R	WHEEL BRAKE B SYS CONT	3-213	G 132	D 9
R	HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(7) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing)

(8) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(9) Remove main gear wheel corresponding to safety valve to be removed (Ref. 12-37-00).

(10) Remove clamp (3).

C. Remove

(1) Cut and remove lockwire and remove screws (5)

(2) Remove safety valve (4)

(3) Remove spools (2)

(4) Install blanking plug in each of the base plate ports

D. Preparation of Replacement Component

NOTE : Safety valve is filled with product No.011 (Ref. 20-30-00).

(1) On spools (2) remove and discard seals and back-up rings

(2) Check spools (2) for correct condition. Replace if necessary.

(3) Install new seals (6) and (9) and new back-up rings (7) and (8) on spools (2)

NOTE : The O-ring seal is installed on the end of each spool marked with a circular groove.

E. Install

(1) Remove blanking plugs from base plate ports.

(2) Install spools in their respective bores in base plate (1).

NOTE : The grooved end of the spool must be installed facing the base plate.

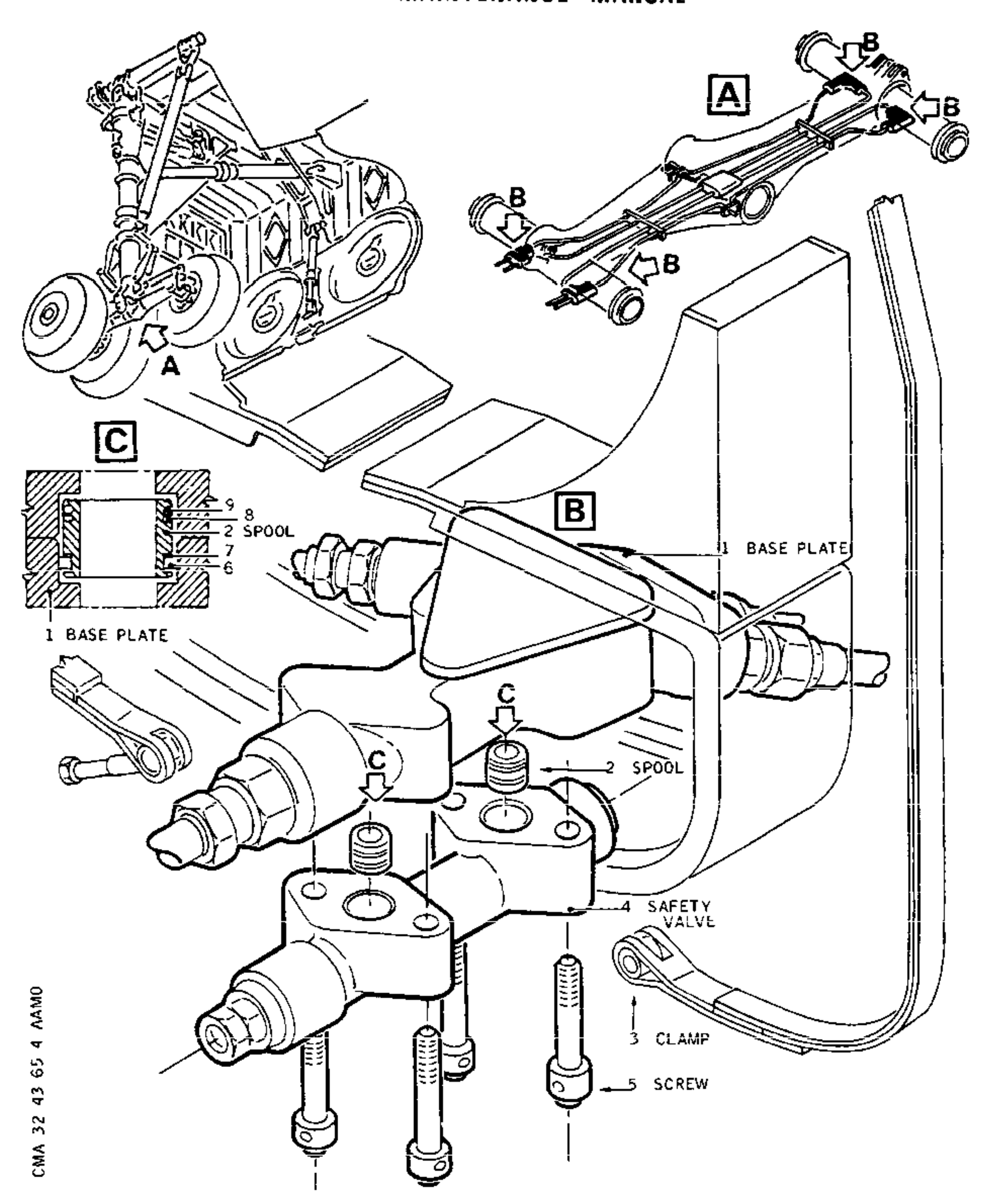
(3) Remove blanking plugs from replacement safety valve.

(4) Install safety valve (4) with screws (5).

NOTE : Each safety valve is equipped with a locating pin.

Safety screws (5) with lockwire (Ref. 20-21-13)

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain in particular that no trace of hydraulic fluid



Safety Valve
Figure 401

remains.

(6) Remove safety clips and tags and reset circuit breakers.

(7) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

F. Test

Bleed brake unit corresponding to replaced safety valve (Ref. 32-43-00, Servicing).
During bleeding operation check safety valve for signs of leakage.

G. Close-Up

(1) Install clamp (3)

(2) Top up Green and Yellow hydraulic tanks (Ref. 12-12-29).

(3) Install main landing gear wheel (Ref. 12-37-00)

(4) Remove warning notices.

HYDRAULIC FUSE - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN CHAPTER 24.00.00 SERVICING.

1. General

The hydraulic fuses are for the protection of the normal braking hydraulic pressure supply following damage to the normal hydraulic system in the landing gear bay.

The hydraulic fuses are located (one each side) in the fillets aft of the landing gear bay between spars 61 and 62.

2. Hydraulic Fuse

A. Equipment and Materials

Description	Part No
Access Platform 4.44m (14 ft 7 in)	
Warning Notices	
Suitable blanking caps	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) Open the main landing gear doors (Ref 32-00-00, Servicing).

(3) Position the access platform below the applicable landing gear bay.

WARNING: DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(4) Depressurize Green (Ref. 29-11-00, Servicing) and Yellow (Ref. 29-21-00, Servicing) hydraulic system.

Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(5) Open access doors
- Under fuselage: 151DB and 153BB.
- Under LH wing: 195CB, 195HB and 197CB.
- Under RH wing: 196CB, 196HB and 198CB.

(6) Prepare for hydraulic fluid spillage.

C. Remove (Ref. Fig. 401)

(1) Gain access to the applicable hydraulic fuse.

(2) Disconnect hydraulic lines (3 and 6).

NOTE: Blank off lines and hydraulic fuse connections to prevent ingress of dirt and excessive hydraulic fluid leakage.

(3) Unscrew the clamp (1) and remove the hydraulic fuse (2) from the support (5).

D. Install

(1) Check that the hydraulic fuse (2) is clean and undamaged.

(2) Position hydraulic fuse (2) on support (5) and secure with clamp (1). Make sure that hydraulic fuse (2) is correctly orientated.

(3) Remove blanking caps from hydraulic lines (3 and 6) and the applicable connections on the hydraulic fuse (2).

(4) Connect and torque tighten hydraulic lines (Ref. 20-23-12).

E. Test

(1) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(2) Pressurize Green and Yellow hydraulic system (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(3) In the flight compartment:
- depress brake pedals and hold for 1 minute.
- release pedals, depress again then release.
- repeat the above procedures two more times.
- check that brake pistons move during this operation.

(4) During the above operations, make sure that there is no hydraulic fluid leakage at the pipe unions.

F. Close-Up

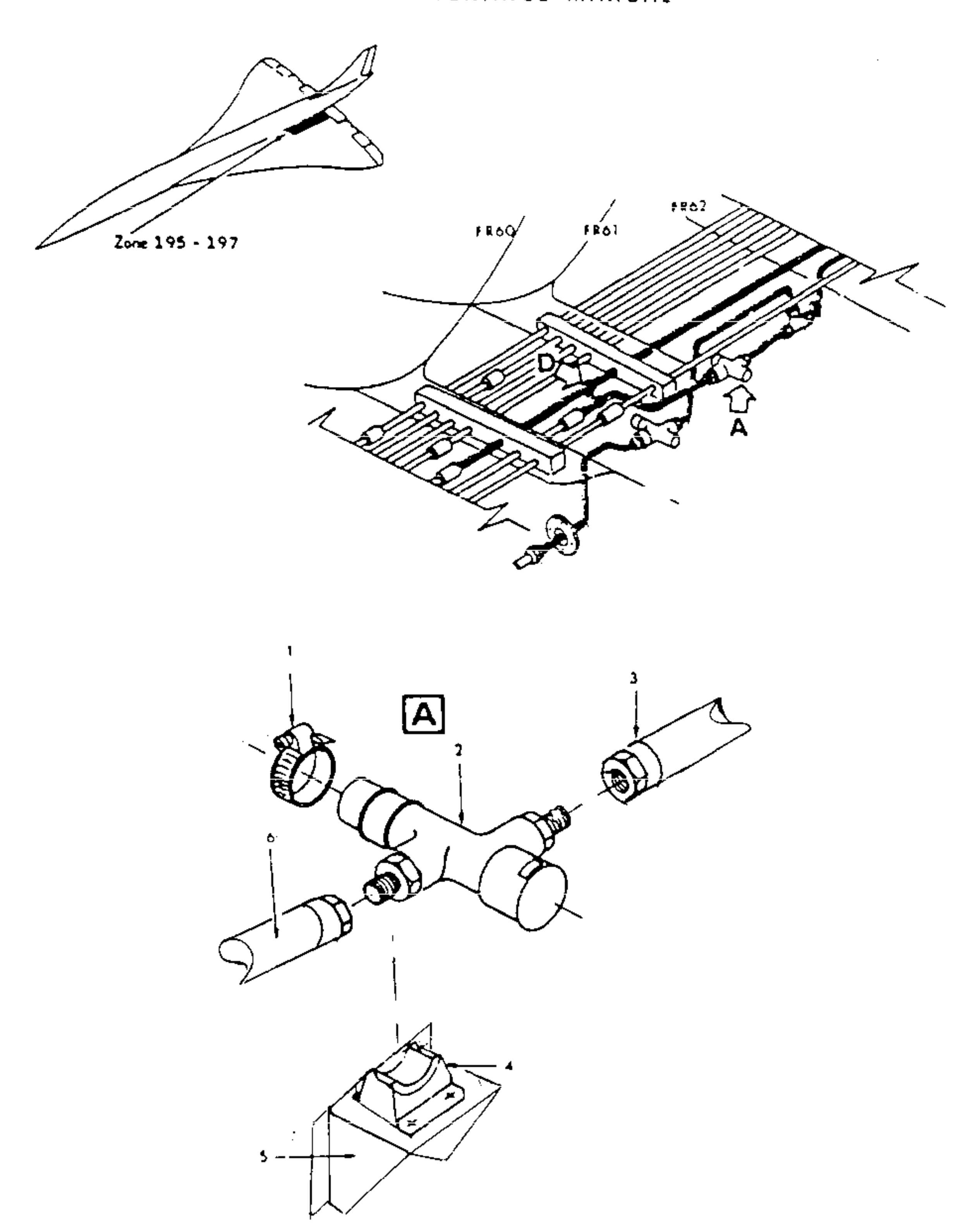
(1) If necessary replenish Green and Yellow hydraulic tanks (Ref. 12-12-29).

(2) Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(3) Close access doors
- Under fuselage: 151DB and 153BB
- Under LH wing: 195CB, 195HB and 197CB
- Under RH wing: 196CB, 196HB and 198CB

(4) Close the landing gear doors (Ref. 32-00-00, Servicing).

(5) Remove the warning notices from the flight compartment.

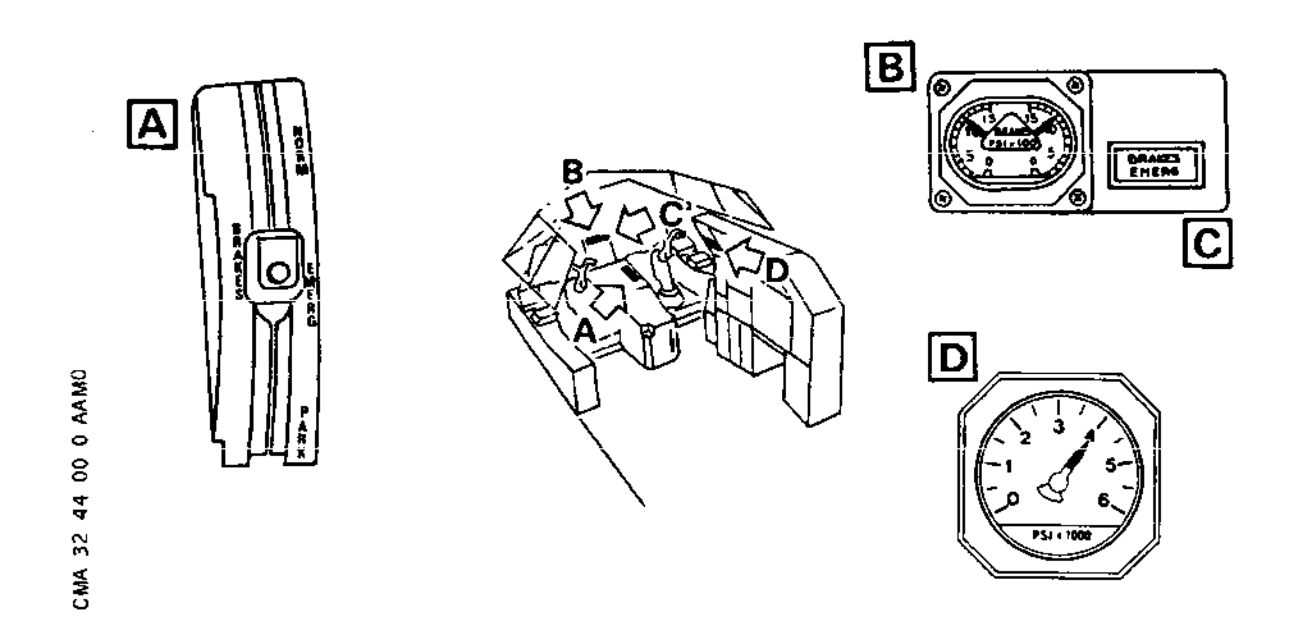


Hydraulic Fuse - Removal/Installation
Figure 401

1. General

Emergency braking is achieved by depressing the rudder pedals, which mechanically operate a self-contained hydraulic control system. Operating pressure is supplied by the Yellow hydraulic system with an accumulator as an added power source. Proportional and differential Emergency braking is basically hydraulic, with no electronic control means provided.

2. Controls and Indicating (Ref. Fig. 001)



Controls and Indicating - Emergency Braking
Figure 001

R A. Emergency braking is controlled by a selector lever located on the centre console.

B. Indicating is provided by :

(1) A dual pressure gauge, mounted on the centre instrument panel indicating the Emergency pressure delivered to

R the RH and LH main gear wheel brakes.

(2) A single pressure gauge, mounted on the Flight Engineer's panel, which indicates the Emergency braking accumulator pressure.

R (3) A yellow BRAKES EMERG warning light on the centre instrument panel illuminates when the brake selector lever is placed in EMERG position. It indicates that Normal braking is no longer available.

3. Description (Ref. Fig. 002, 003 and 004)

A. Mechanical Controls

The mechanical control installation comprises rudder pedals which actuate two master cylinders (3680 - 3681) through rods and bellcranks. One master cylinder is connected to
R the Captain's and First Officer's LH pedals, the other to
R the RH pedals. The pedals are returned by internal springs in the master cylinders.

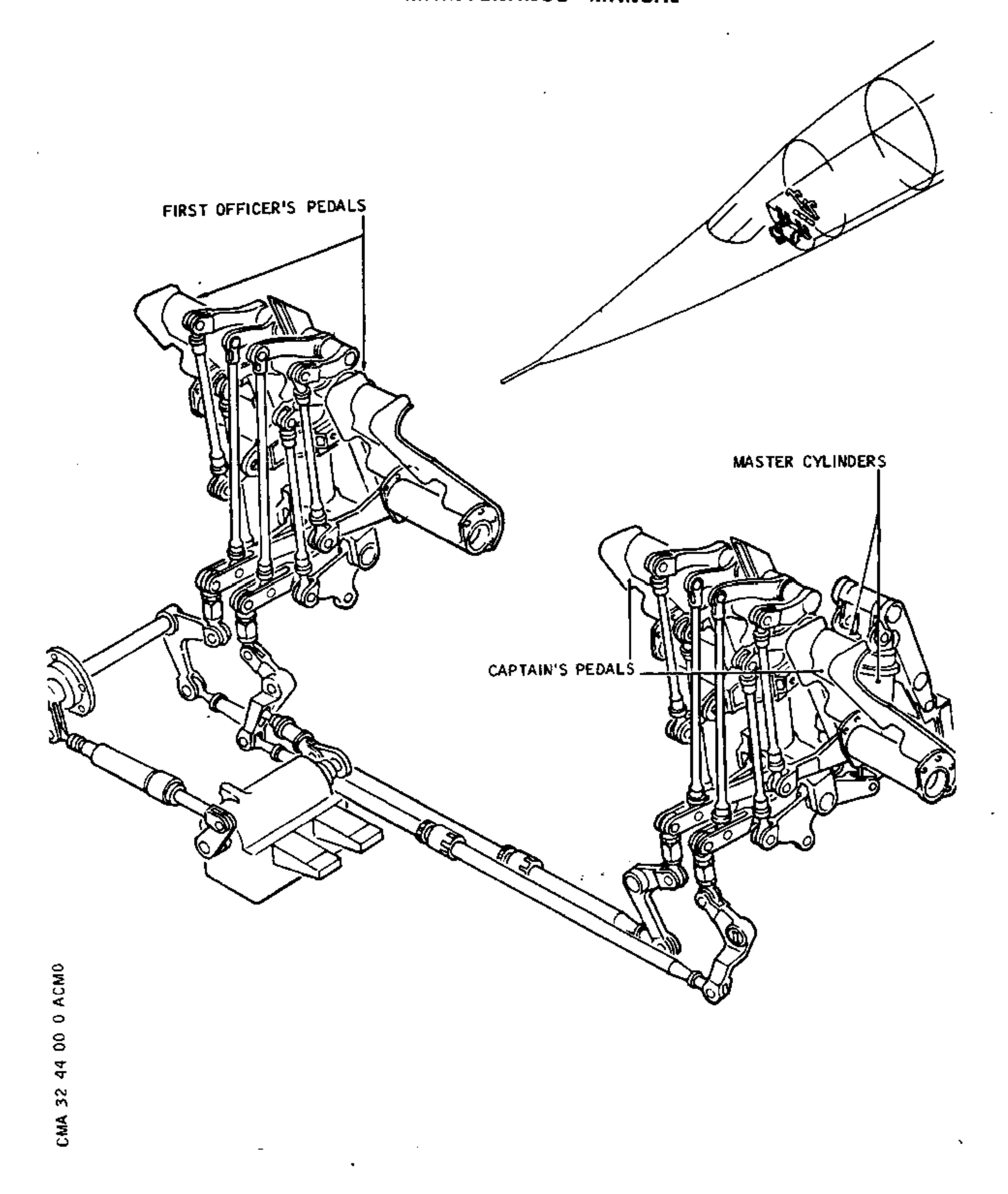
B. Self-Contained Hydraulic Control System

The self-contained hydraulic control system which is installed under the flight compartment floor and in the nose gear bay, comprises :

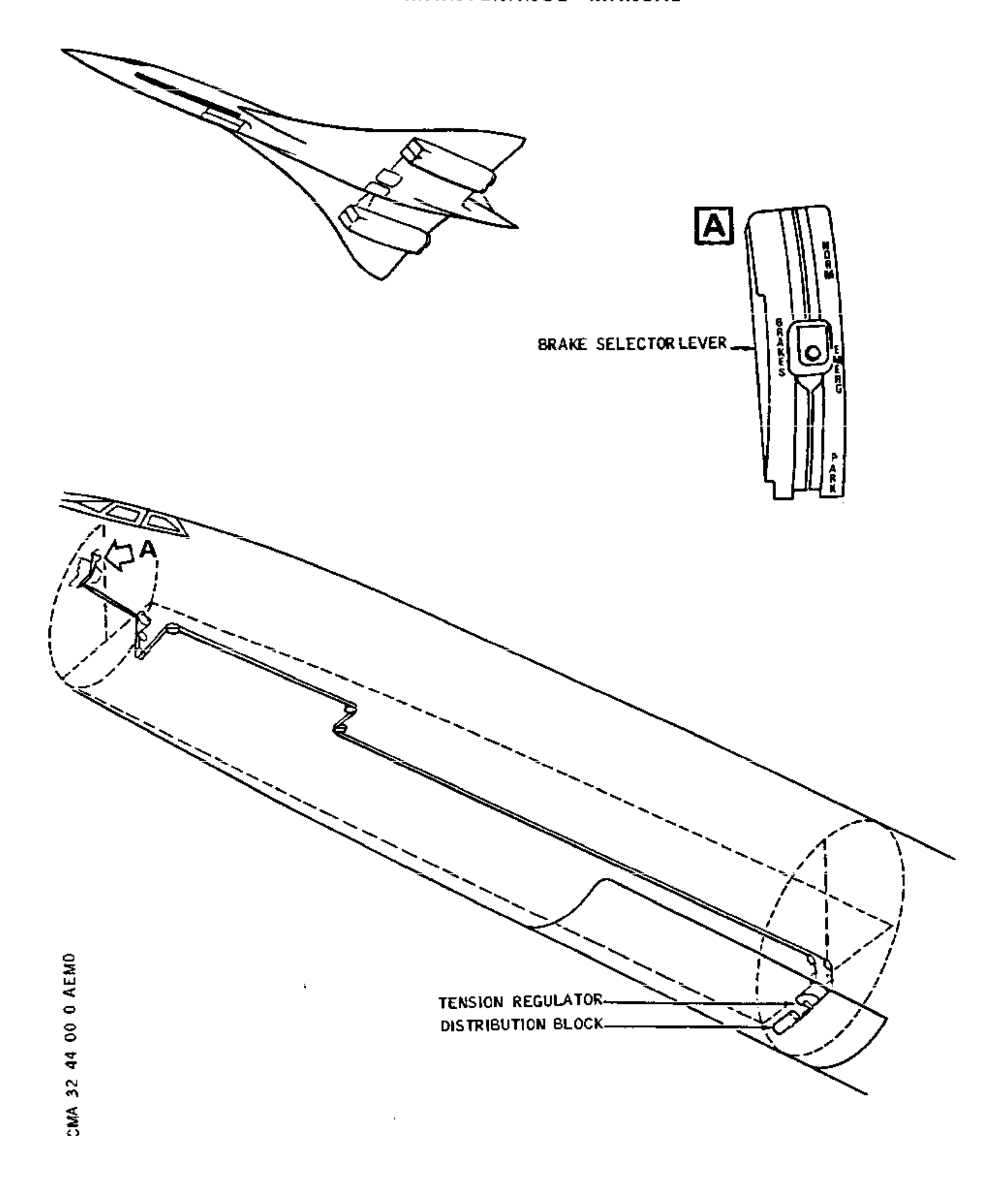
(1) Two hydraulic master cylinders (3680 - 3681) operated by the rudder pedals.
Each hydraulic master cylinder is internally loaded by two springs.
The first spring applies an opposing load proportional to pedal travel within the limits of Normal braking. (up to second load threshold).
The second spring serves to limit Emergency braking
R pressure to 80 ± 5 bars (1160 ± 72.5 psi) corresponding
R to a pedal travel of 12 degrees approx.
R Past 12 degrees, a second load threshold of between 30
R and 38 daN. (66 and 85.5 lbf.) must be intentionally overcome to acquire Emergency braking pressure superior to normal Emergency braking values.

(2) Header tank (3682).

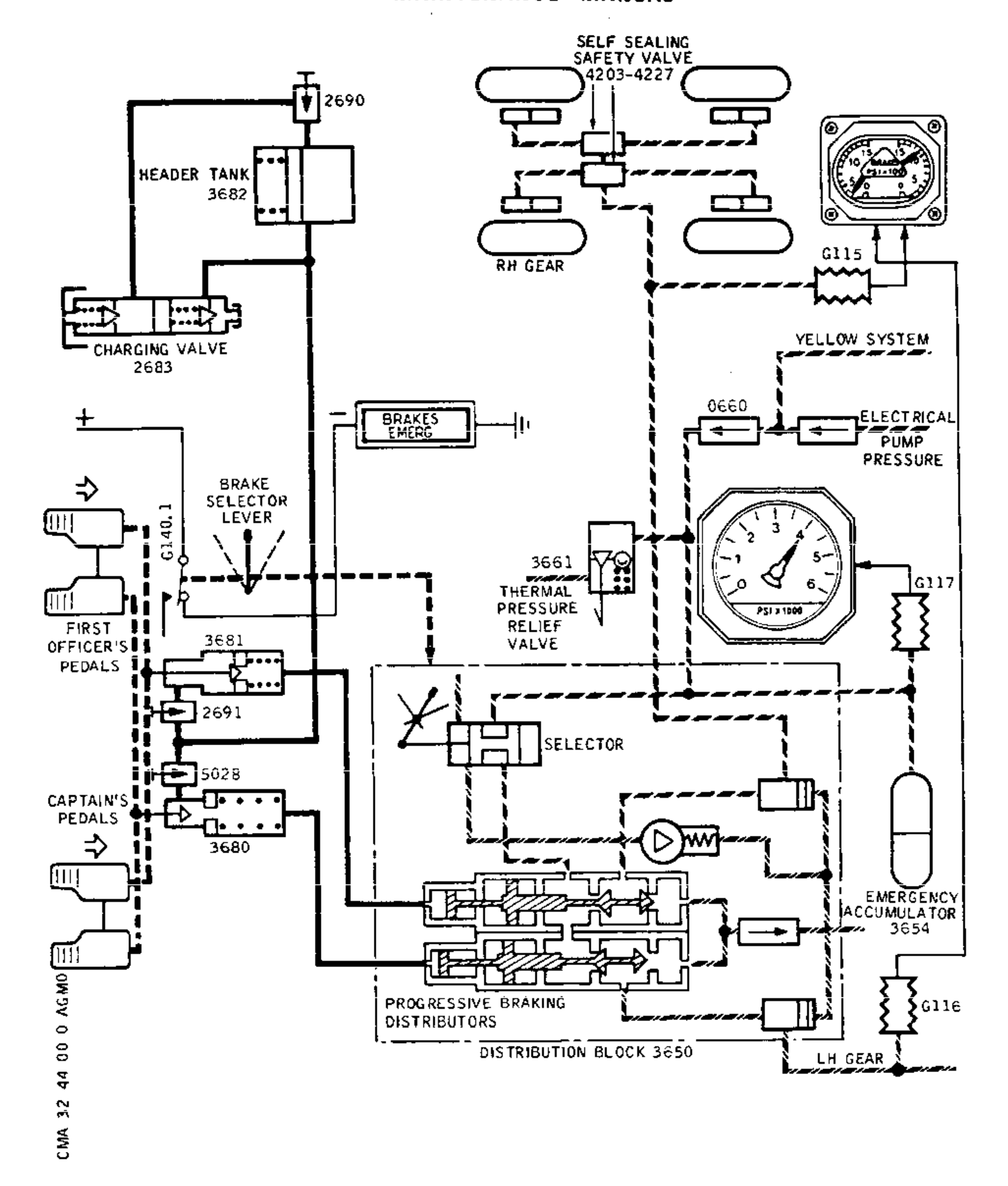
The header tank is incorporated in the master cylinder system and provides a sealed reservoir of hydraulic fluid for operation of the Emergency braking LP control system. The unit prevents system cavitation and is self compensating for thermal expansion and contraction of fluid within the system.



Mechanical Braking Control Assembly
R Figure 002



Distribution Block Mechanical Control
Figure 003



Emergency Braking System
Figure 004

R

(3) Charging valve (2683)

The charging valve is incorporated in the master cylinder/header tank hydraulic system and has two separate functions. Firstly, as a charging valve for replenishing fluid lost fron the header tank and secondly as a relief valve for excess pressure developed due to thermal expansion.

(4) Three bleed valves, one (2690) on the header tank the other two (2691 - 5028) on the master cylinders.

(5) A brake distribution block (3650) installed in the nose gear bay (zone 128).
It includes two progressive braking distributors remote controlled by the self-contained hydraulic control system master cylinders. Each progressive braking distributor is fitted with a bleed valve.

C. Yellow Hydraulic System

The Yellow hydraulic system comprises :

(1) An Emergency accumulator (3654), pressurized by the Yellow system. On the ground only, this accumulator can be pressurized by an electro-pump unit controlled from the GRND HYD. CHECK OUT control panel on the Flight Engineer's panel. This accumulator supplies the pressure for Emergency braking, and is able to provide pressure for seven braking applications in the event that Yellow system pressure is cut off.

(2) A selector valve, incorporated in distribution block (3650) corresponding to the positions NORM, EMERG, PARK of the brake selector lever on centre console. Selector valve control is provided through a system of cranks and cables with tension regulator.
With brake selector lever in EMERG position the selector valve distributes hydraulic pressure to the brake units via the two progressive braking distributors.

R (3) A thermal pressure relief and manual unloading valve
R (3661). The thermal pressure relief valve protects the
R Emergency braking hydraulic system against excessive
R temperature and pressure.
R It also serves for manual depressurization of the
R Emergency accumulator for servicing purposes.

R (4) Four safety valves (4202, 4203, 4226, 4227).
Each safety valve (self-sealing) is installed under the bogie beam in the Emergency braking hydraulic line

supplying two brake units (inner or outer) on the same main landing gear. In the event of leakage downstream of the safety valve, the valve isolates the supply line of the brake unit concerned (the other brake unit is still supplied with pressure).

4. Block - Brake Distribution (3650) (Ref. Fig. 005)

A. General

The brake distribution block is only functional when Emergency or Parking braking is selected.

B. Description

The distribution block is comprised of :

- Two identical brake control valves acting on LH or RH brakes.
- A pressure reducing valve (only functional when Parking braking is selected).
- A mechanically controlled selector valve.
- Two shuttle valves.

(1) Brake control valve

The brake control valves are supplied with pressure by the master cylinders.
Each brake control valve is comprised of a balance piston assembly, a spool and a spring loaded sleeve.
They deliver pressure to the brakes via the shuttle valves.
A bleed connection is fitted to the end of each control valve.

(2) Pressure reducing valve

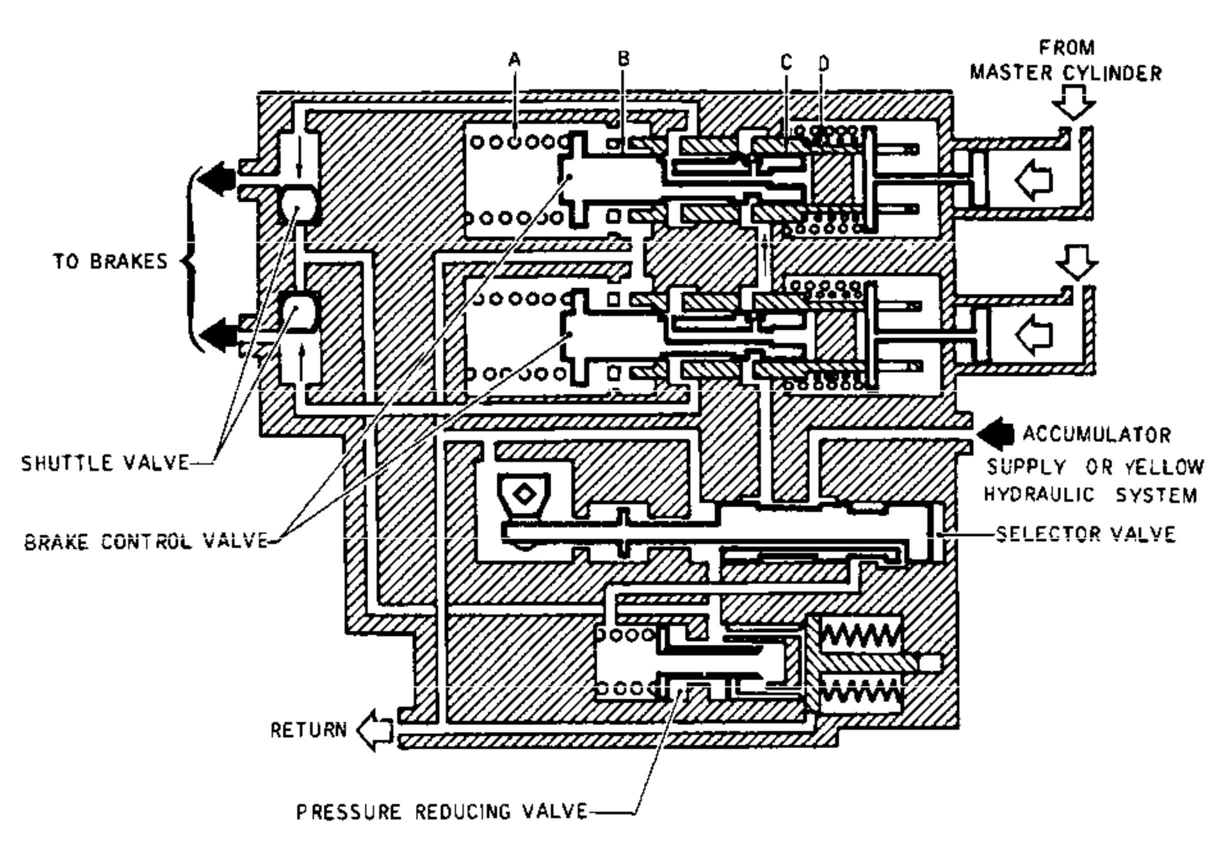
The pressure reducing valve incorporates an inlet valve and exhaust valve.
The fluid passages of the inlet valve are linked to the shuttle valves and the fluid passages of the exhaust valve are linked to the return system.

(3) Selector valve

The selector valve incorporates a spool which is mechanically operated from the flight compartment through the brake selector lever.
The spool supplies or cuts off hydraulic fluid to the brake control valves.

C. Operation

When the brake selector lever is in EMERG position, Yellow hydraulic system pressure or accumulator (3654) pressure is ported to the brake control valves.



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Brake Distribution Block
Figure 005

This pressure and the loading of spring (D), move the control valve inner sleeve (C) which closes the return passage. The spool (B) then moves and connects the pressurized supply to the shuttle valve.
This movement also connects the spool drillings to the pressurized supply.
The pressure in the spool simultaneously acts on the balance piston (E) and the spool end faces pushing back the spool against the loading of spring (A).
The movement of the spool and the increase in pressure delivered to the brake continues until the supply pressure is balanced by the increased loading of the spring.

The pressure delivered to the brakes is proportional to the load applied to the brake pedals.

When the brake pedal is released the components of the brake distribution block return to their initial positions under the influence of the springs.

R 5. Valve - Thermal Pressure Relief and Manual Unloading (3661)
R (Ref. Fig. 006)

R A. General

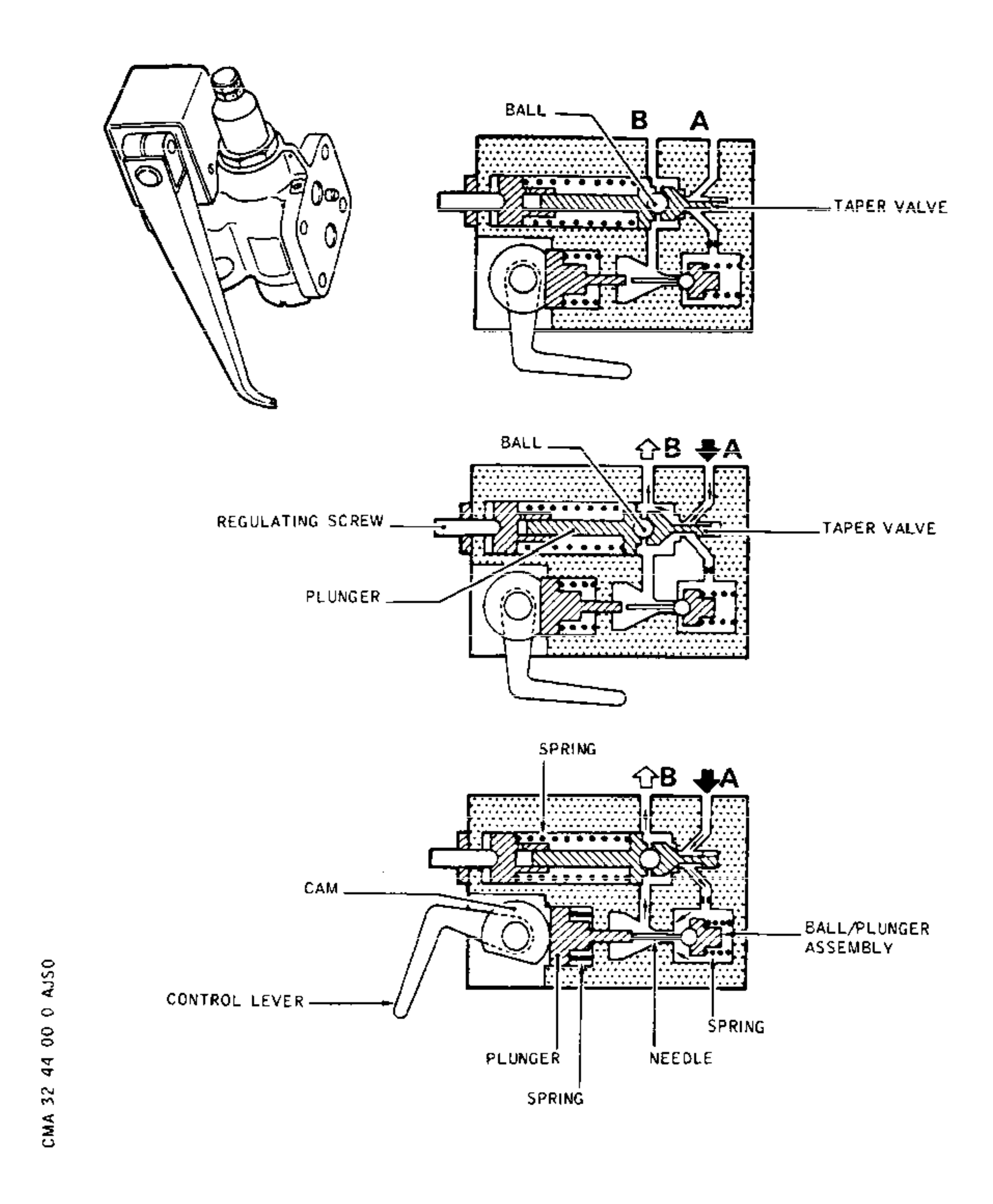
R The thermal pressure relief and manual unloading valve
R protects the Emergency braking hydraulic system and compo-
R nents against excessive temperature and pressure.
R It also serves for manual depressurization of the Emergency
R accumulator.

R B. Description

R The pressure relief valve comprises a body fitted with a
R discharge valve and manually operated pressure relief valve.
R The discharge valve is composed of a cylindrical body in
R which slides a spring-loaded plunger and a taper valve. The
R plunger rod is guided by a piston loaded by the spring
R against a regulating screw which serves to adjust the ten-
R sion of the spring. A threaded ring in the valve body serves
R as a guide for the stem of a taper valve. A ball transmits
R the movement of the taper valve to the plunger.
R The manual unloading mechanism comprises a guide equipped,
R at one end, with a cam mounted on a drive pin. A lever
R is installed on the splined end of the drive pin. A plunger
R is loaded against the cam by a spring. A needle transmits
R movement from the cam operated plunger through the valve
R seat to a spring-loaded ball plunger.

R C. Operation

R When the pressure at A is lower than the release pressure
R which is predetermined by the calibration of the spring, the
R discharge valve remains closed.
R When the pressure at A begins to exceed the release pres-
R sure, the taper valve moves from its seat, progressively
R compressing the spring through the ball/plunger assembly.
R The hydraulic connection from A to B is progressively
R opened. When the pressure falls the spring pushes the valve
R back against its seat and the connection from A to B is
R closed. During manual unloading the control lever rotates
R the drive pin, the cam acts on the plunger and the needle
R pushes back the ball thus opening the connection from A to
R B.
R When the control lever is returned to its initial position,
R the spring pushes the plunger back against the cam flat.
R The ball/plunger assembly is loaded against its seat by the
R spring and the connection from A to B is closed.



R Thermal Pressure Relief and Manual Unloading Valve
Figure 006

R 6. Valve - Safety (4202, 4203, 4226, 4227)
(Ref. Fig. 007)

A. General

The safety valve is a dual valve installed in the Emergency hydraulic line supplying the two inner or outer brake units on the same main landing gear. In the event of leakage downstream of the safety valve, the safety valve isolates the brake unit concerned (the other brake unit is still supplied with pressure).

B. Description

The safety valve consists of a body with central bore. Three ports are drilled in this body :
- One pressure inlet port A.
- Two pressure outlet ports D and C.
Sealing between the safety valve and the corresponding base plate is achieved through three spools fitted with seals.

The body is fitted with :

- a central pierced sleeve

- two pistons, one either side of the sleeve. The pistons are drilled with holes which serve as hydraulic fluid restrictors.

- a plug spring assembly at either end.
  The springs load the pistons against the sleeve.

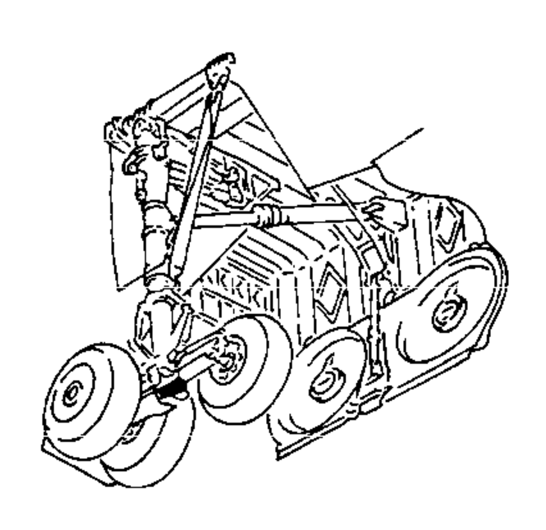
- a bleed port at either end blanked off with a plug fitted with a seal.

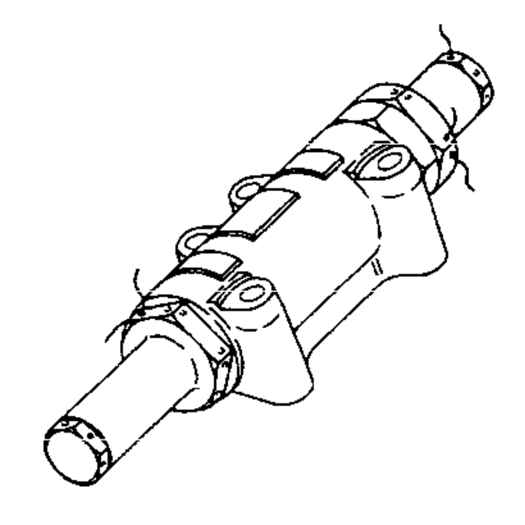
C. Operation

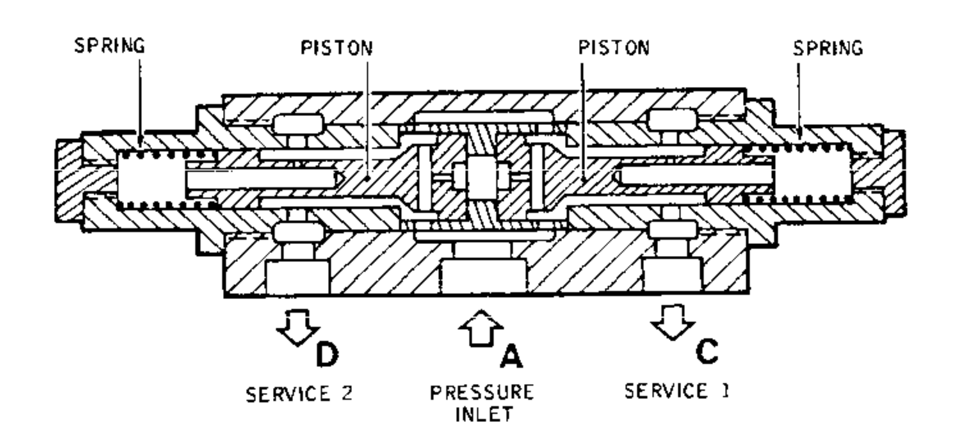
When there is no fluid flow, the pistons are loaded against the sleeve under the action of the springs.

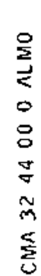
(1) Normal flow

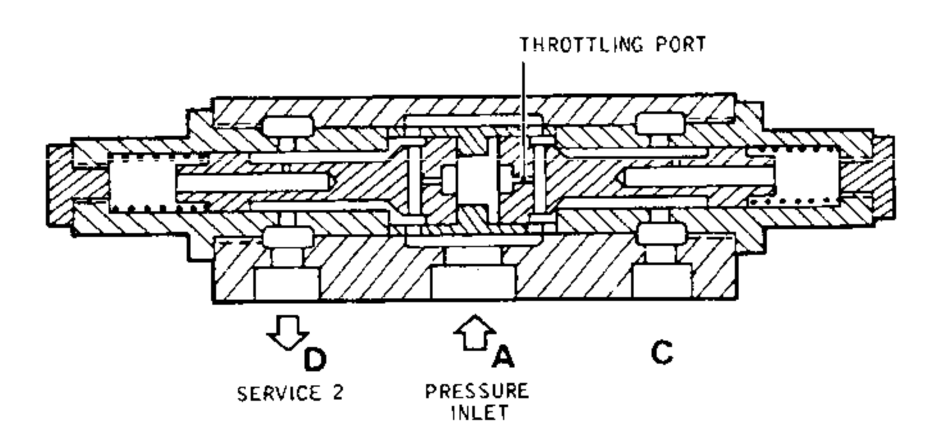
Each hydraulic line supplying the brake units should be made up of similar components. The supply lines should be of equal length.
During normal operation, the pressure passes from A towards D and C. Flow towards D and C being symmetrical the pressure drop between A and C and between A and D is similar and very low as there is practically no flow in supply lines 1 and 2. As the pressure to either side of each piston is practically the same, the action











Safety Valve
Figure 007

of the springs is sufficient to keep the pistons loaded against the sleeve.

(2) Leakage downstream of safety valve (Example : leak downstream of C).

As soon as A is supplied with pressure, the flow, due to the leak, causes a significant drop in pressure between A and C.

The pressure acting on the piston (sleeve side), restricted at the throttling port, compresses the spring and closes the valve. Pressure at A maintains the piston in the closed position. The spring remains compressed C is isolated from A.

(3) Restoration of safety valve to normal operating condition.

The piston remains in the closed position even when A is not supplied. The pressurization of the Yellow hydraulic tank upstream of A is sufficient to maintain the piston in the closed position ; the system downstream of C being completely depressurized (leak). The piston only returns to its initial position when there is zero pressure at A.

R 7. Operation (Ref. Fig. 001, 003 and 004)

A. When the brake selector lever is placed in EMERG position, microswitch assemblies (G140-1) and (G140-2) are simultaneously actuated.
Microswitch assembly (G140-1) causes BRAKES EMERG warning light located on centre instrument panel to illuminate.
Microswitch (G140-2) cuts off power to Normal brake supply selector valve (G137). Normal braking system hydraulic supply is automatically cut off.

B. When the brake selector lever is placed in EMERG position, it mechanically controls the distribution block (3650) selector valve. Yellow system or accumulator pressure is delivered to the progressive braking distributors.

C. By acting on the self-contained system hydraulic fluid, each master cylinder causes the displacement of a piston valve in the progressive braking distributor. The hydraulic fluid is returned to the header tank through master cylinders (3680 - 3681) when the pedals are released.
The progressive braking distributors return to their rest position and the brakes are no longer supplied.

D. Brake pressure delivered to the brakes is proportional to the displacement of the progressive distributor piston valves.
With the piston valves in end-of-travel position, a pressure of 215 + 15, - 10 bars (3118 + 217, - 145 psi) is applied to the brakes. The distributor return systems are protected by a non-return valve.

E. When the pedals are depressed to the second load threshold of between 30 and 38 daN (66 and 85.5 lbf.) position (12 degrees approx.), the pressure supplied to the brakes is 80 ± 5 bars (1160 ± 72.5).

F. In the case of an acceleration-stop the pilot can depress the pedals past the second load threshold position to supply the brakes with a maximum pressure of 215 + 15, - 10 bars (3118 + 217, - 145 psi).

On the centre instrument panel, the pointers on the dual pressure gauge are in maximum stop position.

G. In the event of a pressure drop in the Yellow system, each progressive distributor is supplied by accumulator (3654) pressure. In such case non-return valve (0660) isolates the Yellow system.

EMERGENCY BRAKING - TROUBLE SHOOTING

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, SERVICING.

1. General

The following trouble shooting procedures are intended to enable faults found in the Emergency braking system to be quickly rectified. These procedures deal only with the hydraulic system and indicating circuit.
The defect can be isolated with the aid of the trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.

Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101). The table provides information, including component location, required for rectification.

All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

NOTE: If vibrations occur at the brake units during braking at very low speed bleed Emergency braking system (Ref. 32-43-00, Servicing) before proceeding with trouble shooting.

R 2. Prepare

A. On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

B. On centre console, make certain that the landing gear and door Emergency control lever is in NEUTRAL position.

C. On centre console, make certain that brake control lever is in NORM position.

D. Make certain that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EMER BRAKE PRESS IND	2-213	G 112	E15
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
BRAKE ACCUM PRESS IND	13-216	G 111	A12
BRAKE EMER/ACCUM WATER PIPE HTR CONT	25-216	G 119	B 7
BRAKE EMER/ACCUM PRESS IND		G 118	C 6

E. Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

3. Trouble Shooting

```
*****************************************************
* Prepare system for trouble shooting as described  *
* in paragraph 2. On centre console, place brake    *
* control lever in EMERG position. On centre instru-*
* ment panel BRAKES EMERG warning light comes on. IF*
*****************************************************
    ||      ||      -----------------------------------------------
    ||      ||     | BRAKES EMERG warning light [3] does not come on|
    OK   NOT OK----| Ref. Chart 101                                 |
    ||              -----------------------------------------------
*****************************************************
* On Flight Engineer's panel, flag not visible on   *
* Emergency brake accumulator pressure gauge [10]   *
*****************************************************
    ||      ||      -----------------------------------------------
    ||      ||     | Flag visible on Emergency brake accumulator    |
    OK   NOT OK----| pressure gauge [10]                            |
    ||             | Ref. Chart 102                                 |
    ||              -----------------------------------------------
*****************************************************
* Emergency brake accumulator pressure correct. IF  *
*****************************************************
    ||      ||      -----------------------------------------------
    ||      ||     | Emergency brake accumulator pressure incorrect.|
    OK   NOT OK----| Ref. Chart 103                                 |
    ||              -----------------------------------------------
*****************************************************
* On centre intrument panel, flag not visible on    *
* Emergency brake dual pressure gauge [16]. IF      *
*****************************************************
    ||      ||      -----------------------------------------------
    ||      ||     | Flag visible on Emergency brake dual pressure  |
    OK   NOT OK----| gauge [16].                                    |
    ||             | Ref. Chart 104                                 |
    ||              -----------------------------------------------
*****************************************************
* Depress pedals to second load threshold. Emergency*
* braking pressure is correct. IF                   *
*****************************************************
    ||      ||      -----------------------------------------------
    ||      ||     | Emergency braking pressure nul at both main    |
    OK   NOT OK----| gears. Check low pressure system for leakage.  |
    ||      ||      -----------------------------------------------
```

```
    ||      ||     -------------------------------------------------
    ||      ||     | Emergency braking pressure irregular at LH or |
    ||      ||     | RH main gear. Bleed low and high pressure     |
    ||  NOT OK----| systems of gear concerned.                     |
    ||      ||     | (Ref. 32-44-00, Servicing)                    |
    ||      ||     -------------------------------------------------
    ||      ||
    ||      ||     -------------------------------------------------
    ||      ||     | Emergency braking pressure incorrect at LH or |
    ||  NOT OK----| RH main gear.                                  |
    ||             | Ref. Chart 105                                |
    ||             -------------------------------------------------
*****************************************************
* Fully depress pedals. Emergency braking pressure  *
* correct. IF                                       *
*****************************************************
    ||      ||     -------------------------------------------------
    ||      ||     | Emergency braking pressure nul at both main   |
    OK  NOT OK----| gears. Check low pressure system for leakage.  |
    ||      ||     -------------------------------------------------
    ||      ||
    ||      ||     -------------------------------------------------
    ||      ||     | Emergency braking pressure irregular at LH or |
    ||      ||     | RH main gear. Bleed low and high pressure     |
    ||  NOT OK----| systems of gear concerned. (Ref. 32-44-00,     |
    ||      ||     | Servicing).                                   |
    ||      ||     -------------------------------------------------
    ||      ||
    ||      ||     -------------------------------------------------
    ||      ||     | Emergency braking pressure incorrect at LH or |
    ||  NOT OK----| RH main gear.                                  |
    ||             | Ref. Chart 106                                |
    ||             -------------------------------------------------
*****************************************************
* On steward's panel 1-221, place GROUND SERVICE    *
* switch in ON position.                            *
* Flag does not appear on Emergency brake dual      *
* pressure gauge [16] and Emergency brake accumula- *
* tor pressure gauge [10]. IF                       *
*****************************************************
    ||      ||     -------------------------------------------------
    ||      ||     | Flag appears on Emergency brake dual pressure |
    ||      ||     | gauge [16] and Emergency brake accumulator    |
    OK  NOT OK----| pressure gauge [10].                           |
    ||      ||     | Ref. Chart 107                                |
    ||      ||     -------------------------------------------------
```

```
 ||       ||    ------------------------------------------------
 ||       ||    | Flag appears on Emergency brake accumulator  |
 ||   NOT OK----| pressure gauge [10]. Replace relay G120 [1]  |
 ||       ||    ------------------------------------------------
 ||       ||
 ||       ||    ------------------------------------------------
 ||       ||    | Flag appears on Emergency brake dual pressure |
 ||   NOT OK----| gauge [16]. Replace relay G121 [2]            |
 ||             ------------------------------------------------
****************************************************
* Emergency braking system is serviceable. Restore *
* system to normal operating condition.            *
****************************************************
```

```
***************************************-------------------------------
* BRAKES EMERG WARNING LIGHT [3] DOES*| GROUND EQUIPMENT REQUIRED    |
* NOT COME ON.                       *|------------------------------|
**************************************| DESCRIPTION        PART NO.  |
                                      |------------------------------|
                                      | MULTIMETER                   |
                                      --------------------------------

**********************************************************************
* On centre console, place LIGHTS-TEST switch in TEST position. On *
* centre instrument panel BRAKES EMERG warning light comes on.      *
**********************************************************************
                 |                                   |
                YES                                  NO
                 |                                   |
**************************************  ----------------------------
* Check voltage between BRAKES EMERG *  | Replace BRAKES EMERG     |
* warning light terminal 2 and ground*  | warning light [3]        |
**************************************  ----------------------------
             |              |
             0V            28V
             |              |
****************************  ------------------------
* Check circuit breaker    *  | Replace BRAKES EMERG |
* G132 [4]                 *  | warning light [3]    |
****************************  ------------------------
        |        |
        |        |            -------------------------
        |        |            | Replace circuit breaker |
        OK     NOT OK---------| G132 [4]                |
        |                     -------------------------
        |                     ----------------------------
        |                     | Replace Emergency Parking |
        ----------------------| brake unit switch assy    |
                              | G140 [9]                  |
                              ----------------------------
```

Chart 101

```
**************************************
* FLAG VISIBLE ON EMERGENCY BRAKE    *
* ACCUMULATOR PRESSURE GAUGE [10]    *
**************************************
********************************************************************
* On steward's panel 1-221, place GROUND SERVICE switch in ON      *
* position. Flag disappears on Emergency brake accumulator pressure*
* gauge.                                                           *
********************************************************************
           |                                              |
          YES                                             NO
           |                                              |
*************************                ----------------------------------------
* Check circuit breaker *                | Replace Emergency brake accumulator  |
* G111 [5]              *                | pressure gauge [10]                  |
*************************                ----------------------------------------
       |        |
       |        |
       |        |
       |        |                        --------------------------
       |        |                        | Replace circuit breaker |
       OK     NOT OK---------------------| G111 [5]                |
       |                                 --------------------------
       |
       |                                 --------------------------
       ----------------------------------| Replace relay G120 [1]  |
                                         --------------------------
```

Chart 102

```
*************************************--------------------------------
* EMERGENCY BRAKE ACCUMULATOR       *| GROUND EQUIPMENT REQUIRED    |
* PRESSURE INCORRECT.               *|------------------------------|
*************************************| DESCRIPTION        PART NO.  |
                                     |------------------------------|
                                     | DECADE BOXES                 |
                                     --------------------------------

*********************************************************************
* Pressurize Yellow hydraulic system. (Ref. 29-21-00, Servicing).   *
* Pressure indicated is correct.                                    *
*********************************************************************
     |   |    --------------------------------------------------
     |   |    | Open door 151 DB. Disconnect Emergency brake supply |
     |   |    | transmitter [13] plug G117A and connect one decade  |
     |   |    | box (91 ohms) between plug terminal A and ground and|
    NO YES---| another decade box (95 ohms) between plug terminal C|
     |        | and ground.                                         |
     |        | Emergency brake accumulator pressure gauge [10]     |
     |        | reads 2500 psi                                      |
     |        ------------------------------------------------------
***************************             |     |
* Depress pedals.         *             |     |    -----------------------------
* Pressure remains correct*             |     |    | Replace Emergency brake|
***************************            YES   NO--| accumulator pressure   |
             |                          |          | gauge [10]             |
             |                          |          --------------------------
             |                          |
             |                          |          --------------------------
            NO                          ---------| Replace Emergency brake|
             |                                     | supply transmitter [13]|
             |                                     --------------------------
             |
*********************************************************************
* Depressurize Emergency brake accumulator through valve 3661.      *
* Emergency brake accumulator [15] nitrogen pressure is correct.    *
*********************************************************************
                 |                                  |
                YES                                 NO
                 |                                  |
-------------------------------------   ------------------------------
| Replace non-return valve 0660 [14] |   | Replace accumulator [15] |
-------------------------------------   ------------------------------
```

Chart 103

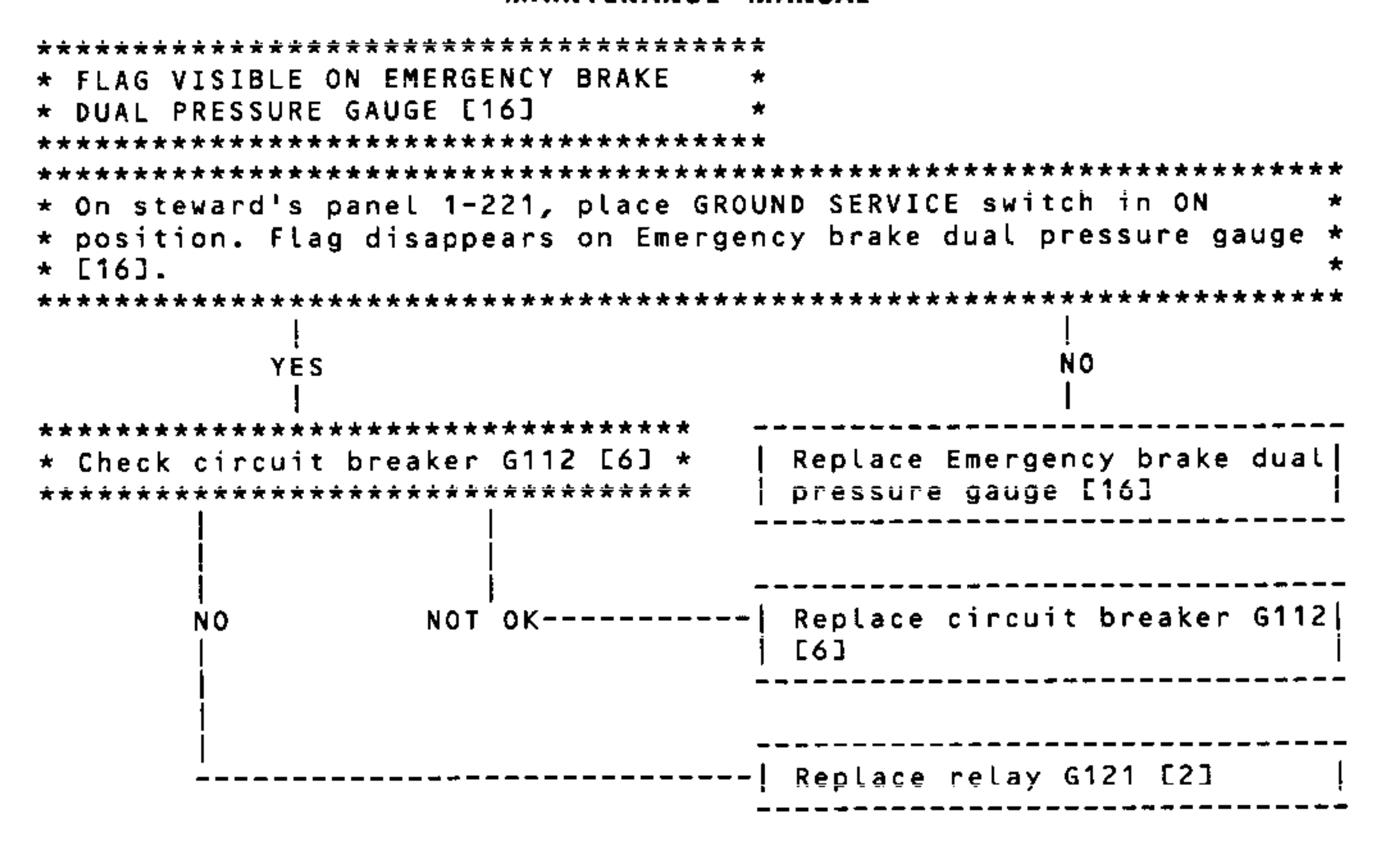

FLAG VISIBLE ON EMERGENCY BRAKE DUAL PRESSURE GAUGE [16]
On steward's panel 1-221, place GROUND SERVICE switch in ON position. Flag disappears on Emergency brake dual pressure gauge [16].
YES
NO
Check circuit breaker G112 [6]
Replace Emergency brake dual pressure gauge [16]
NO
NOT OK
Replace circuit breaker G112 [6]
Replace relay G121 [2]

Chart 104

```
****************************************-----------------------------
* EMERGENCY BRAKING PRESSURE IN-       *| GROUND EQUIPMENT REQUIRED  |
* CORRECT AT LH OR RH MAIN GEAR        *|----------------------------|
****************************************| DESCRIPTION       PART NO. |
                                        |----------------------------|
                                        | AIR HYDRAULIC              |
                                        | TOOL KIT                   |
                                        | DECADE BOXES               |
                                        ------------------------------

*******************************************************************
* Open gear doors (Ref. 32-00-00, Servicing). Connect a pressure  *
* gauge to brake distribution block [19] bleed valve corresponding *
* to gear concerned. The pressure delivered by the master cylinder *
* [17] or [18] is between 72 and 87 psi.                          *
*******************************************************************
                    |                                       |
                   YES                                      NO
                    |                                       |
**********************************************  -----------------
* In main gear bay, disconnect corresponding *  | Replace master |
* Emergency brake pressure transmitter plug  *  | cylinder [17]  |
* (G115A or G116A). Connect one decade box   *  | or [18]        |
* (85.4 ohms) between plug terminal A and    *  -----------------
* ground and another decade box (100.6 ohms) *
* between plug terminal C and ground. On     *
* Emergency brake dual pressure gauge,       *
* corresponding gauge reads 1000 psi.        *
**********************************************
       |     |  ---------------------------------------------------
      YES   NO-| Replace Emergency brake dual pressure gauge [16] |
       |        ---------------------------------------------------
*******************************************************************
* In main gear bay, disconnect hydraulic line from transmitter con-*
* cerned and connect a pressure gauge. Gauge reads between 1087 and*
* 1232 psi.                                                       *
*******************************************************************
             |                                  |
            YES                                 NO
             |                                  |
---------------------------------  ------------------------------
| Replace transmitter concerned |  | Replace brake distribution |
| [11] or [12]                  |  | block [19]                 |
---------------------------------  ------------------------------
```

Chart 105

EMERGENCY BRAKING PRESSURE INCORRECT AT LH OR RH MAIN GEAR

GROUND EQUIPMENT REQUIRED

DESCRIPTION	PART NO.
AIR HYDRAULIC TOOL KIT	
DECADE BOXES	

Open gear doors (Ref. 32-00-00, Servicing). Connect a pressure gauge to brake distribution block [19] bleed valve corresponding to gear concerned. The pressure delivered by the master cylinder [17] or [18] is between 101 and 116 psi.

- NO: Replace master cylinder [17] or [18]
- YES: In main gear bay, disconnect corresponding Emergency brake pressure transmitter plug (G115A or G116A). Connect one decade box (85.4 ohms) between plug terminal A and ground and another decade box (100.6 ohms) between plug terminal C and ground. On Emergency brake dual pressure gauge, corresponding gauge reads 1000 psi.
  - NO: Replace Emergency brake dual pressure gauge [16]
  - YES: In main gear bay, disconnect hydraulic line from transmitter concerned and connect a pressure gauge. Gauge reads between 2973 and 3336 psi.
    - YES: Replace transmitter concerned [11] or [12]
    - NO: Replace brake distribution block [19]

Chart 106

```
**************************************
* FLAG APPEARS ON EMERGENCY BRAKE    *
* DUAL PRESSURE GAUGE [16] AND       *
* EMERGENCY BRAKE ACCUMULATOR        *
* PRESSURE GAUGE [10]                *
**************************************

**********************************
* Check circuit breaker G118 [7] *
**********************************
        |            |
        |            |            ------------------------------------
        OK           NOT OK-------| Replace circuit breaker G118 [7] |
        |                         ------------------------------------
        |
        |                         ------------------------------------
        --------------------------| Replace circuit breaker G119 [8] |
                                  ------------------------------------
```

Chart 107

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	ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
	[1] Relay		12-216	G120	RH elec- tronics rack	32-00-00 R/I	32-44-01
	[2] Relay		12-216	G121	LH Elec- tronics rack	32-00-00 R/I	32-44-01
	[3] BRAKES EMERG warning light		6-211	G134	On centre instrument panel	32-00-00 R/I	32-43-03
R R	[4] Circuit breaker		3-213	G132	Map.Ref. D 9	24-50-00 R/I	32-43-03
R R	[5] Circuit breaker		13-216	G111	Map.Ref. A12	24-50-00 R/I	32-44-01
R R	[6] Circuit breaker		2-213	G112	Map.Ref. E15	24-50-00 R/I	32-44-01
R R	[7] Circuit breaker		25-216	G118	Map.Ref. C 6	24-50-00 R/I	32-44-01
R R	[8] Circuit breaker		25-216	G119	Map Ref. B 7	24-50-00 R/I	32-44-01
	[9] Emergency parking brake unit switch	212 JS	9-211	G140	RH side of centre console	32-45-12 R/I	32-43-03
	[10] Emergency brake accumula- tor pressure gauge		12-214	G114	Flight Engineer's panel	32-44-92 R/I	
	[11] RH Emer- gency brake pressure trans- mitter		672	G115	RH main gear bay	32-44-61 R/I	32-44-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[12] LH Emergency brake pressure transmitter		572	G116	LH main gear bay	32-44-61 R/I	32-44-01
[13] Emergency brake supply pressure transmitter	151 DB	151	G117	Hydraulics bay - LH side	32-44-61 R/I	32-44-01
[14] Emergency brake system HP aft non-return valve	712	128	0660	Nose gear bay - RH side	32-00-00 R/I	
[15] Emergency brake system accumulator	151 DB	151	3654	Forward of hydraulics bay	32-44-66 R/I	
[16] Emergency brake dual pressure gauge		6-211	G113		32-44-91 R/I	32-44-01
[17] LH brake hydraulic master cylinder		121	3680	Under rudder pedals	32-44-31 R/I	
[18] RH brake master cylinder		121	3681	Under rudder pedals	32-44-31 R/I	
[19] Brake distribution block	712	128	3650	Nose gear bay	32-44-41 R/I	

Component Identification
Table 101

STAND-BY/EMERGENCY BRAKING - SERVICING

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Proceed simultaneously with header tank replenishing and low pressure system bleeding.

Proceed with Emergency braking system bleeding using the bleed screws located on the torque plates.

R After SB 32-080-01 For A/C 001-007,

R 1. General

R Proceed simultaneously with header tank replenishing and low
R pressure system bleeding.

R Proceed with Emergency braking system bleeding using the bleed
R screws located on the torque plates.

R After work on Normal and Emergency braking system sliding
R tube proceed with bleeding of the Normal and Emergency braking
R systems using the bleed screws located on the torque plates.

2. Low Pressure System Bleeding

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Ground Power Unit-Hydraulic Power and Preliminary Testing	EMH398E
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.22 m (10 ft. 7 in.)	
Replenishing and Bleeding Unit - Aircraft Braking and Tank Top-Up System	D920865000
Vinyl Hoses, Adaptable to Bleed Valves	
Container	
Lockwire Dia 0.60 mm (0.024 in.) (Corrosion-Resistant Steel)	
Hydraulic Fluid (Ref. 20-30-00, No.011)	
Circuit Breaker Safety Clips	

B. Prepare (Ref. Fig. 301)

(1) Take the precautions described in the previous WARNING paragraph.

(2) On centre console, make certain that the brake selector lever is in NORM position.

(3) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(4) Make certain that the visor is not uplocked.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Connect hydraulic ground power unit to Green hydraulic system.

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(9) Remove locking cap and open gear doors by means of operating handle located on nose gear leg.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(11) Shut down hydraulic ground power unit.

(12) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(13) Display a warning notice in the flight compartment prohibiting the use of Captain's and First Officer's pedals.

(14) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(15) Install safety collars on door actuating jacks.

(16) Open access doors 113DB, 121AB, 121DB, 121FB under fuselage.

(17) Remove floor panel 212GF in the flight compartment.

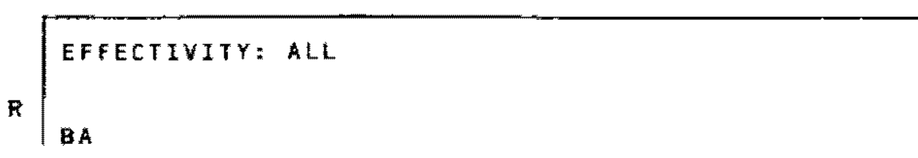
(18) Connect a vinyl hose to : header tank bleed valve, bleed valve of each master cylinder, both union valves of distribution block.
Submerge other end of each hose in container filled with product No.011.

(19) Connect replenishing and bleeding unit D920865000 to

CMA 32 44 00 3 AAM0

HEADER TANK
EMERGENCY ACCUMULATOR PRESSURE
DISTRIBUTION BLOCK
MASTER CYLINDER
TWD BRAKE
PEDALS
DISTRIBUTOR VALVE
RETURN
DISTRIBUTOR VALVE
MASTER CYLINDER
PEDALS
TWD BRAKE
REPLENISHING AND BLEEDING UNIT
FILLER VALVE

Low Pressure System Bleeding
Figure 301


EFFECTIVITY: ALL

R BA

the supply port of filler valve (line shall be filled with product No.011).

C. Bleeding

(1) Make certain that Captain's and First Officer's pedals are in fully released position.

(2) Replenish the system using replenishing and bleeding unit D920865000.
Maximum pressure : 4 bars (58.01 psi).
Maintain a steady flow until the fluid overflows through the pressure relief valve port of the filler valve (bayonet cap installed).

(3) Maintain a 1.5 to 2 bars (21.75 to 29.00 psi) pressure in system.

(4) Continue replenishing and open simultaneously header and master cylinder bleed valves until fluid flow is free of air bubbles. Close bleed valves.

(5) Maintain a steady flow, open distribution block bleed valves until fluid flow is free of air bubbles.

NOTE : During these operations, supply the system continually.
Make certain that the pedals (Captain's and First Officer's) are in fully released position.
If necessary, renew bleeding operations several times until fluid flow is completely free of air bubbles.

(6) Check that the red float in header tank is not visible (confirming that header tank is topped up).

(7) Disconnect replenishing and bleeding unit D920865000.
Install cap on filler valve.

(8) Disconnect vinyl hoses.

(9) Remove hydraulic fluid containers.

(10) Safety bleed valves and union valves with lockwire.

(11) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(12) Remove safety collars.

(13) Remove access platform.

(14) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

(15) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(17) Close gear doors by operating handle located on nose gear leg. Install locking cap.

(18) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

D. Test

(1) On completion of bleeding procedure check system carefully for leakage.

E. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Shut down and disconnect hydraulic ground power unit.

(3) De-energize aircraft electrical network and disconnect electrical ground power unit.

(4) Close access doors and install floor panel.

(5) Remove warning notice in flight compartment.

3. Emergency Brake System Bleeding

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Ground Power Unit-Hydraulic-Power And Preliminary Testing	EMH398E
Vinyl Hose	
Container	
Lockwire Dia. 0.60 mm (0.024 in.), (Corrosion-Resistant Steel)	
Hydraulic Fluid (Ref. 20-30-00, No. 011)	

B. Prepare

NOTE : - Before bleeding Emergency braking system make certain that the low pressure system has previously been bled.
- Bleeding of the Emergency braking system can be performed with aircraft on jacks.

(1) Take the precautions described in the previous WARNING paragraph.

(2) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) Connect hydraulic ground power unit to Yellow hydraulic system.

(4) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(5) On centre console, place brake selector lever in EMERG position.

(6) On the first brake unit to be bled, locate the Emergency braking system bleed screw on opposite side of torque plate to brake manifold. Remove lockwire from bleed screw.

NOTE : Use of the bleed screw remote from the brake manifold ensures complete bleeding. Bleeding from the bleed screw adjacent to the manifold alone may not be fully effective.

(7) Connect vinyl hose to bleed screw and submerge free end of hose in a container of product No.011 (Ref. 20-30-00).

(8) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

C. Bleeding (Ref. Fig. 302)

(1) Depress Captain's or First Officer's pedal corresponding to brake to be bled 4° approx. (equivalent to a pedal load of 22 daN (49.5 lbf.) approx.) to obtain a pressure at the brake of between 30 and 40 bars (435 and 580 psi).

(2) Slowly loosen bleed screw to obtain a steady flow of fluid. When fluid flow is free of air bubbles tighten bleed screw while maintaining pedal position.

NOTE : Too high a bleed pressure will cause discharging fluid to "froth" thus making detection of air free fluid virtually impossible.

Tighten bleed screw and torque to 96 lbf (1.08 m.daN). Safety bleed screw with lockwire (Ref. 20-21-13).

(3) Perform same operations for other brake units.

R (4) Bleed safety valve spring chamber.

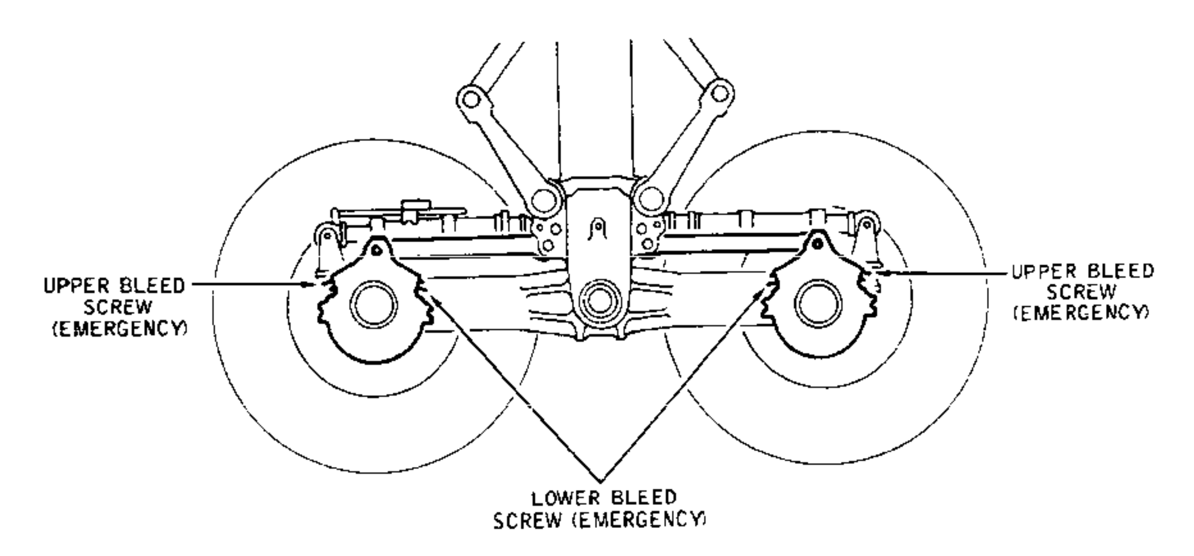
(a) Cut and remove lockwire from plugs at the end of the safety valve.

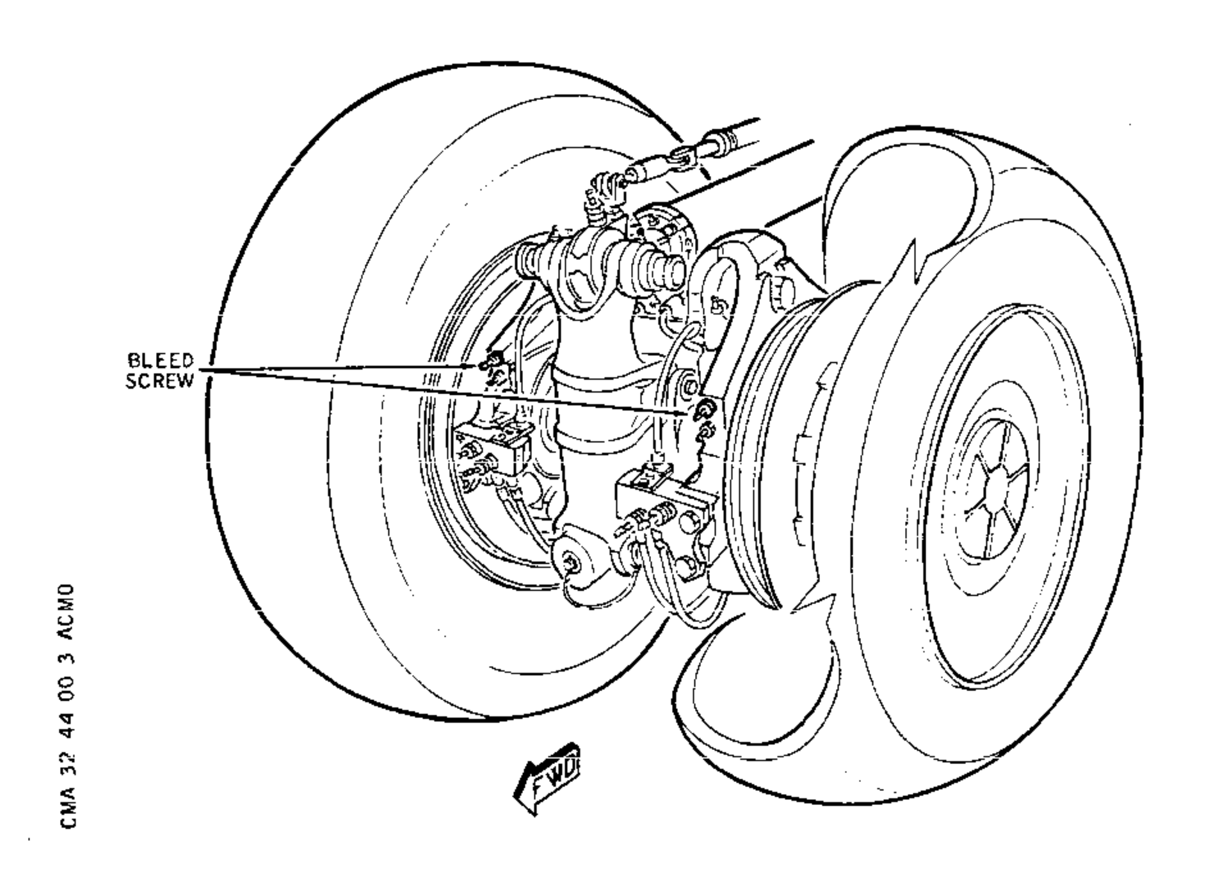
(b) Slightly back off plugs and let hydraulic fluid flow until spring chamber is free from air bubbles.

NOTE : The spring chamber is bled by applying
R light pressure via the brake pedal and
R slightly backing off plug to prevent extrusion of the seals.

R (c) Tighten plugs and safety with lockwire (Ref. 20-21-13).

(d) Repeat the same procedure to bleed the other





Location of Emergency Braking System Bleed Screws
Figure 302

safety valve.

R

D. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing). Disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Disconnect vinyl hose.

(4) If necessary, replenish Yellow hydraulic tank (Ref. 12-12-29).

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

R (6) Perform an operational test (Ref. 32-44-00, Adjust-
R ment/Test).

R After SB 32-080-01 For A/C 001-007,

R 4. Bleeding of Normal and Emergency braking systems after removal
R /installation of a Normal/Emergency sliding tube.

R A. General
R Bleeding of Normal and Emergency braking systems is
R necessary after removal/installation of a Normal/Emergency
R sliding tube.

R B. Equipment and Materials
R

R	DESCRIPTION	PART NO.
R	Electrical Ground Power Unit	
R R	Ground Power Unit-Hydraulic-Power And Preliminary Testing	EMH398E
R R	Vinyl Hoses, Adaptable to Bleed Valves	
R	Hydraulic Fluid Container	
R R	Lockwire Dia. 0.60 mm (0.024 in.), (Corrosion-Resistant Steel)	

DESCRIPTION	PART NO.
Hydraulic Fluid (Ref. 20-30-00, No. 011)	

C. Prepare

NOTE 1 : Bleeding of braking systems can be performed with aircraft on jacks or on wheels. If the aircraft is on jacks, shunt terminals of the following microswitches :
On nose gear shock absorber
G320 : Terminals A and C
On LH main gear shock absorber
G322 : Terminals A and B

NOTE 2 : Before bleeding Emergency braking system, make certain that the low pressure system has previously been bleed.

(1) Take the precautions described in the previous WARNING paragraph.

(2) Make certain that wheel chocks are in position.

(3) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(4) On centre console, make certain that brake selector lever is in NORM position.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing.

(6) Check that the following circuit breakers are set :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R	NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
R R	LH UC WEIGHT SW "A" SYS SUP		G 292	M17
R R R	WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
REAR OUTER WHEELS BRAKE CONT	1-213	G 183	S17
FWD OUTER WHEELS BRAKE CONT		G 184	S18
RB WHEEL BRAKES TEST IND & SUP		G 9001	S15
WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
FWD INNER WHEELS BRAKE CONT	3-213	G 182	C10
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
RB RB WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6

(7) On the first brake unit to be bled, locate the Normal and Emergency braking system bleed screws on opposite side of torque plate to brake manifold. Remove lockwire from bleed screw.

NOTE: Use of the bleed screw remote from the brake manifold ensures complete bleeding. Bleeding from the bleed screw adjacent to the manifold alone may not be fully effective.

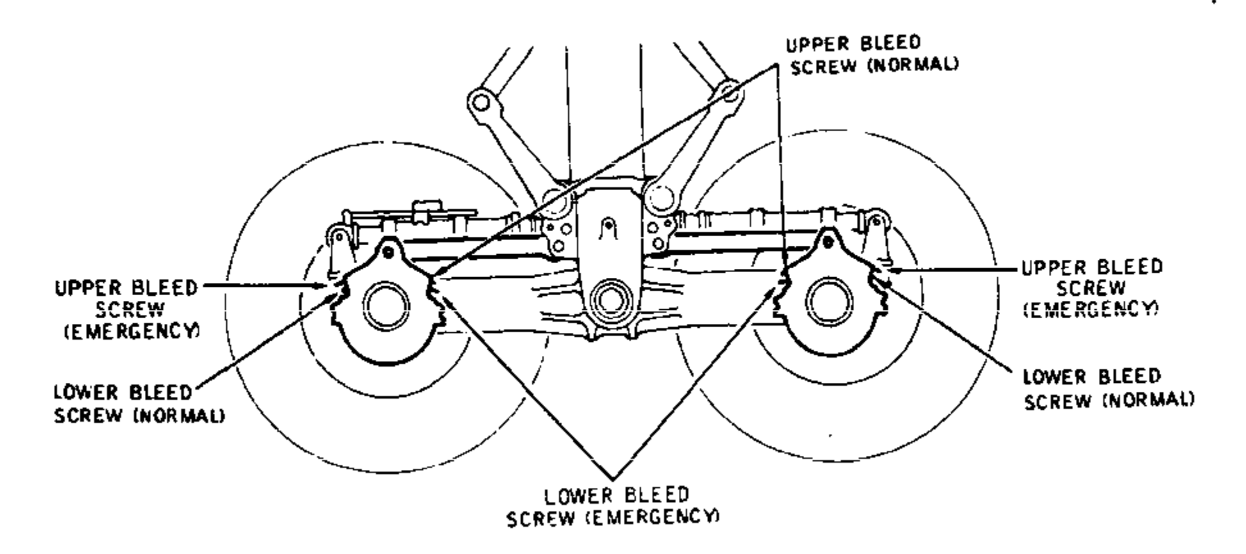
(8) Connect vinyl hose to bleed screw and submerge free end of hose in a container of product No. 011.

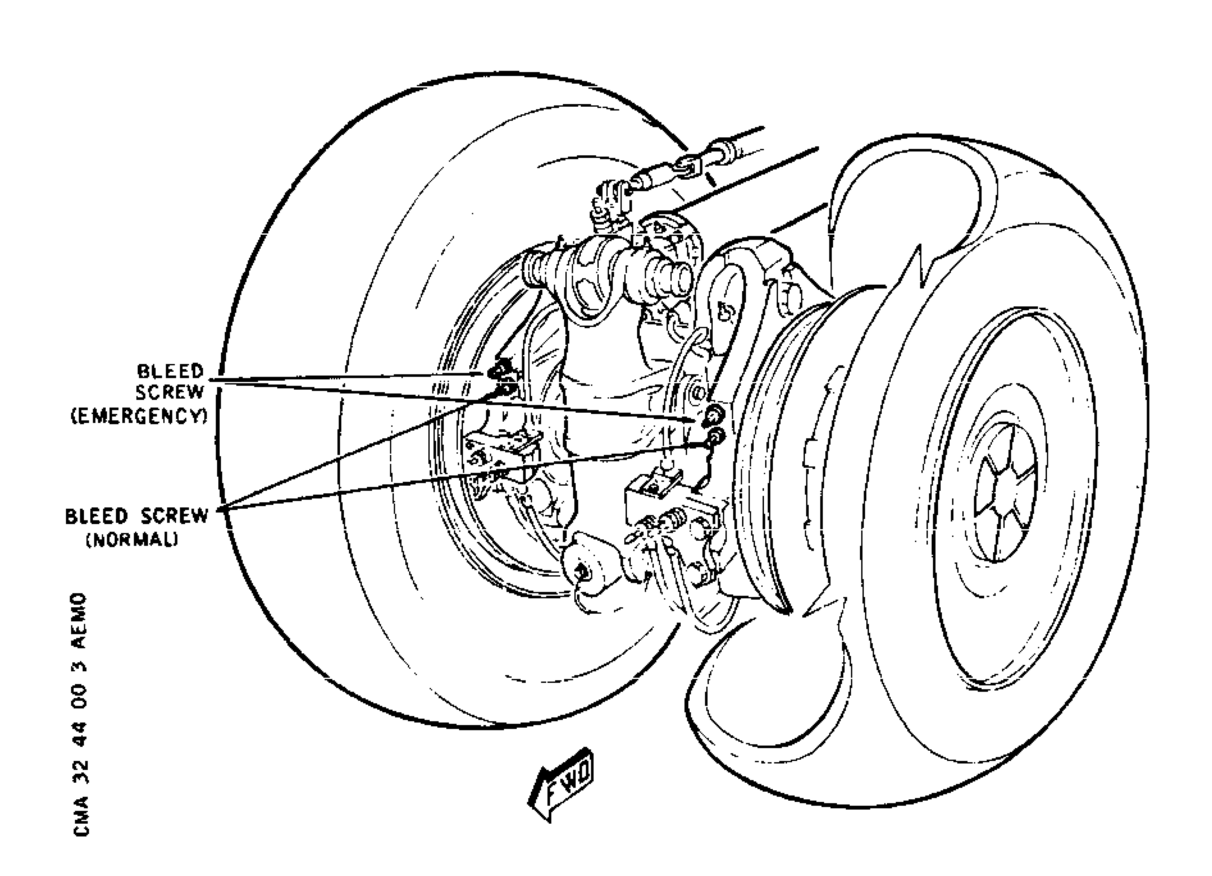
(9) Connect hydraulic ground power unit to Green hydraulic system.

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Bleeding (Ref. Fig. 303)

(1) Depress Captain's or First Officer's pedal corresponding to brake to be bled 4° approx. (equivalent to a pedal load of 22 daN (49.5 lbf.) approx.) to





Location of Normal and Emergency Braking System Bleed Screws
Figure 303

R

obtain a pressure at the brake of between 30 and 40 bars (435 and 580 psi).

(2) Slowly loosen Normal braking system bleed screw to obtain a steady flow of fluid. When fluid is free of air bubbles tighten bleed screw while maintaining pedal position.

NOTE : Too high a bleed pressure will cause discharging fluid to "froth" thus making detection of air free fluid virtually impossible.

(3) Tighten bleed screw and torque to 96 lbf. in. (1.08 m.daN).

(4) Slowly loosen Emergency braking system bleed screw while maintaining pedal position and check that no hydraulic fluid under pressure is expelled from the bleed orifice.

(5) Tighten Emergency braking system bleed screw and torque to 96 lbf. in. (1.08 m.daN).

(6) Perform same operations for bleeding Normal braking system of other brake units.

NOTE : Operations (4) and (5) are to be performed only on one brake unit per landing gear.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) On centre console, place brake selector lever in EMERG position.

(10) Connect vinyl hose to Emergency braking system bleed screw and submerge free end of hose in a container of product No.011.

(11) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(12) Depress Captain's or First Officer's pedal corresponding to brake to be bled 4° approx. (equivalent to a pedal load of 22 daN (49.5 lbf) approx.) to obtain a pressure at the brake of between 30 and 40 bars (435 and 580 psi).

(13) Slowly loosen Emergency braking system bleed screw to obtain a steady flow of fluid. When fluid flow is free of air bubbles, tighten bleed screw while maintaining

R pedal position.

R NOTE : Too high a bleed pressure will cause dischar-
R ging fluid to "froth" thus making detection
R of air free fluid virtually impossible.

R (14) Tighten bleed screw and to torque to 96 lbf. in.
R (1.08 m.daN).

R (15) Perform same operations for other brake units.

R (16) Safety Normal and Emergency braking system bleed
R screws with lockwire (Ref. 20-21-13).

R (17) Bleed safety valve spring chamber.

R (a) Cut and remove lockwire from plugs at the end
R of the safety valve.

R (b) Slightly back off plugs and let hydraulic fluid
R flow until spring chamber is free from air
R bubbles.

R NOTE : The spring chamber is bled by applying
R light pressure via the brake pedal and
R slightly braking off plugs to prevent
R extrusion of the seals.

R (c) Tighten plugs and safety with lockwire (Ref.
R (Ref. 20-21-13).

R (d) Repeat the same procedure to bleed the other
R safety valve.

R E. Close-Up

R (1) Shut down and depressurize Yellow hydraulic system
R (Ref. 29-11-00, Servicing). Disconnect hydraulic
R ground power unit.

R (2) De-energize the aircraft electrical network and dis-
R connect electrical ground power unit.

R (3) If necessary, remove shunts and connect plugs to
R microswitches.

R (4) Disconnect vinyl hoses.

R (5) If necessary, replenish Green and Yellow hydraulic
R tanks (Ref. 12-12-29).

R (6) Make certain that working area is clean and clear of
R tools and miscellaneous items of equipment.

R (7) Perform an operational test (Ref. 32-44-00, Adjust-
R ment/Test).

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Adjustment of Emergency Brake Control After Replacement Of:

(1) Brake selector

(2) Cables

(3) Cable tension regulator

(4) Distribution block

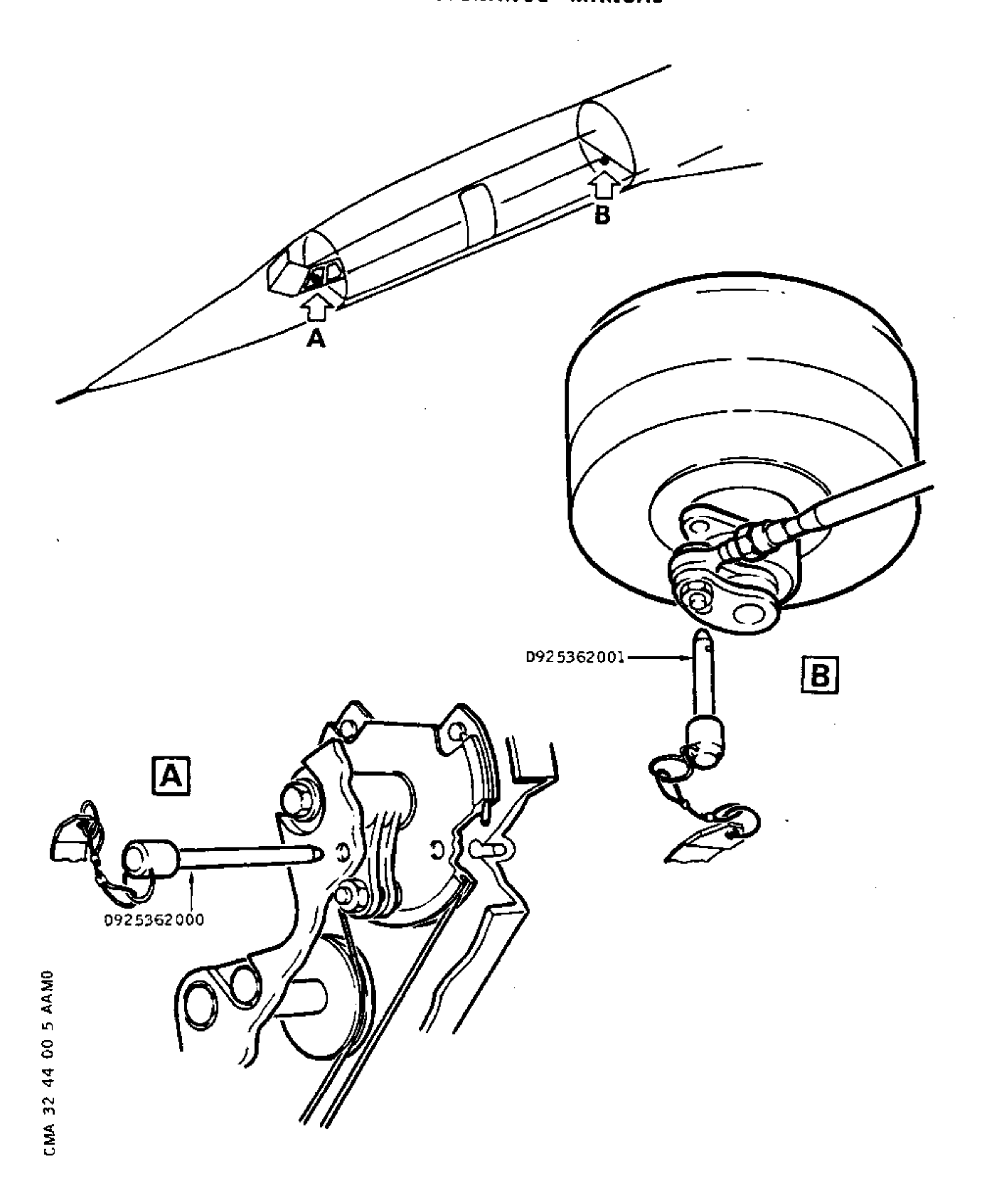
B. Operational Test

C. Functional Test

D. System Test

2. Adjustment of Emergency Brake Control
(Ref. Fig. 501)

A. Equipment and Materials



Emergency Brake Control Rigging
Figure 501

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.97 m (13 ft.)	
Safety Sleeve - Nose Undercarriage Doors	E925002000
Rigging Pin Assy - Console Pulley Lever	D925362000
Pin Assy - Regulator Rigging	D925362001
Key to Tension Cables	
Circuit Breaker Safety Clips	
Lockwire - Dia. 0.032 in. (0.8 mm) Corrosion Resistant Steel	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is in down position.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Make certain that the aircraft wheels are chocked.

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(8) Remove locking cap and open landing gear doors by operating handle located on nose gear leg.

(9) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(10) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(12) Display a warning notice in the flight compartment.

(13) Depressurize Green and Yellow hydraulic systems. (Ref. 29-11-00, Servicing and 29-21-00 Servicing).

(14) Depressurize Emergency brake system by means of valve 3661.

(15) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(16) Install safety collars.

(17) Remove floor panels : 221DF, 221HF, 221LF, 221QF, 221UF, 222VF.

(18) In zone R212, remove the side cover from the centre console casing.

C. Adjustment of Rod between Selector Lever and Centre Console Pulley

(1) On centre console, place brake selector lever in EMERG position.

(2) Check that rigging pin D925362000 can be easily inserted in the holes of centre console rear casing and in the hole of the pulley.

(3) If not :

(a) Remove the clamp connecting rod cover between brake selector and pulley.

(b) Cut and remove lockwire, loosen the two locknuts on rod end fittings.

(c) Adjust rod so that rigging pin D925362000 can be easily inserted in the holes of centre console rear casing and in the holes of the pulley.

(d) Tighten rod locknuts

(e) Double check that rigging pin D925362000 can be easily inserted.

(f) Safety locknuts with lockwire (Ref. 20-21-13).

(g) Position and attach cover on rod by means of the clamp.
The clamp and cover must be positioned 7.00 in (177.8 mm) from the centre of hole located in rear structure measured along the axis of the rod.
Safety clamp with lockwire (Ref. 20-21-13).

D. Adjustment of Cable Tension

(1) Check that rigging pin D925362000 is fitted in the holes of centre console rear casing and in the holes of the pulley.

(2) Check that rigging pin D925362001 can be easily inserted in the hole of regulator lever and casing. The pointer of the regulator should be on position 4 for a 15°C ambient temperature.

(3) If rigging is impossible :

(a) Cut and remove lockwire from the two turnbuckles.

(b) Tighten or loosen evenly and in small increments the two turnbuckles until rigging can be achieved and until the regulator pointer faces position 4 for a 15°C ambient temperature.

NOTE : With other ambient temperatures, a correction of 0.4 graduations is to be made for each 15° C variation with respect to the 15°C reference temperature.
Report the correction on the side of the hot reference (H) for temperature above 15°C or on the side of the cold reference (C) for temperature below 15°C.

(4) Remove rigging pins D925362000 and D925362001. Check that these pins can be readily inserted and removed.

(5) Vibrate whole system by drumming on the cables to remove friction in the system.

(6) Check that the regulator pointer returns to initial position and that the rigging holes are aligned.

(7) If not, renew the adjustment procedures.

(8) Safety the two turnbuckles with lockwire (Ref. 20-21-13).

E. Adjustment of Rod between Cable Tension Regulator and Distribution Block

(1) On centre console, place brake selector lever in EMERG position.

(2) In zone R128, make certain that the line engraved on distribution block lever is aligned with centring pin.

(3) If not :

(a) Cut and remove lockwire, loosen the two locknuts of regulator/distribution block connecting rod.

(b) Adjust the rod so that the line engraved on distribution block lever is aligned with centring pin.

(c) Tighten the two locknuts of connecting rod. Torque to between 30 and 35 lbf.in (0.34 and 0.40 m.daN).
Safety locknuts with lockwire (Ref. 20-21-13).

(4) On centre console, place brake selector lever in PARK position.

(5) Make certain that the gap between centring pin and the slot end of the distribution block lever is not below 0.002 in. (0.05 mm).

(6) On centre console, place brake selector lever in NORM position. Make certain that the Emergency/Parking brake unit switch assembly actuator is pushed in and in contact with the lever.

(7) Check that the magnetic detent incorporated in the

distribution block is engaged.

(a) Disconnect connecting rod.

(b) Check that distribtution block lever is fully engaged in the magnetic detent.

(c) Connect connecting rod.

(8) On centre console, move brake selector lever several times from NORM position to PARK position.

(a) Make certain that the regulator pointer is in its initial position.

(9) On centre console, place brake selector lever in PARK position.

(a) Make certain that the gap between the centring pin and the slot end of the distribution block lever is not below 0.002 in. (0.05 mm).

(10) On centre console, place brake selector lever in NORM position.

F. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Install side cover on centre console casing.

(3) Install floor panels.

(4) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(5) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).
On Flight Engineer's panel check that pressure indicated on Emergency brake accumulator pressure gauge is correct. Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). On Flight Engineer's panel check that pressure indicated of Emergency brake accumulator pressure gauge is still correct.

(6) Remove safety collars.

(7) Remove access platform.

(8) Remove safety clips and tags and reset the circuit

breakers tripped in paragraph B.

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) Close landing gear doors by operating handle located on nose gear leg. Install locking cap.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(14) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(15) Close access doors.

3. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Make certain that the aircraft wheels are chocked.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL or DOWN position.

(4) On centre console, make certain that brake selector lever is in NORM position.

(5) Open door 151DB under fuselage.
Check that pressure is correct in Emergency brake system accumulator and Yellow hydraulic system accumulator.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Make certain that the following circuit breakers are set :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	EMER BRAKE PRESS IND	2-213	G 112	E15
R	WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
R	BRAKE ACCUM PRESS IND	13-216	G 111	A12
R	PLTS LT TEST SUP	15-215	L1001	E14
R	BRAKE EMER/ACCUM PRESS	25-216	G 118	C 6

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
IND BRAKE EMER/ACCUM/WATER PIPE HTR CONT		G 119	B 7

(8) Connect hydraulic ground power unit to Yellow hydraulic system.

C. Test of BRAKES EMERG Warning Light

(1) On centre console, place and hold LIGHTS TEST switch in TEST position.

(a) On centre instrument panel, BRAKES FAIL and BRAKES EMERG warning lights come on.

NOTE : Other lights might come on.

(2) On centre console, release LIGHTS TEST switch

(a) The switch returns to HI position.

(b) BRAKES FAIL and BRAKES EMERG warning lights go off

(3) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(4) On centre console, place LIGHTS TEST switch in LO position.

(a) On centre instrument panel, BRAKES EMERG warning light is dimmed.

(5) On centre console, place LIGHTS TEST switch in HI position.

(a) On centre instrument panel, BRAKES EMERG warning light recovers normal brightness.

(6) On centre console, place brake selector lever in NORM position.

(a) On centre instrument panel, BRAKES EMERG warning

light goes off.

D. Test of Emergency Brake System

(1) On centre console, make certain that brake selector lever is in NORM position.

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Regulated pressure between 268 and 279 bars (3890 and 4050 psi).

(a) On Flight Engineer's panel, check that pressure gauge reads 275 bars (3988 psi).

(3) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(4) Depress Captain's pedals to second load threshold (12° approx.).

(a) Visually check that the brake units are clamped.

(b) On centre instrument panel, check on BRAKES dual pressure gauge that the pressure delivered to LH and RH brakes is 80 ± 5 bars (1160 ± 72.5 psi).

(5) Fully depress pedals (past second load threshold).

(a) Brake units are still clamped.

(b) On centre instrument panel, on dual pressure gauge the pointers are in maximum stop position.

(6) Release Captain's pedals.

(a) Visually check that brake units are no longer clamped.

(b) On centre instrument panel, check on BRAKES dual pressure gauge that the pressure is no longer delivered to LH and RH brakes.

(7) Shut down hydraulic ground power unit (Ref. 29-21-00, Servicing).

(8) In zone 151 - 152, depressurize Yellow hydraulic system by means of pressure relief valve 3339.

WARNING : DO NOT USE PRESSURE RELIEF VALVE 3661.

(a) On Flight Engineer's panel, check on the pressure gauge that the pressure is still 275 bars (3988 psi).

F. Close-Up

(1) On centre console, place brake selector lever in NORM position.

(2) Disconnect hydraulic ground power unit.

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Close access doors.

4. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Make certain that the aircraft wheels are chocked.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL or DOWN position.

(4) On centre console, make certain that brake selector lever is in NORM position.

(5) Open door 151DB under fuselage.
Check that pressure is correct in Emergency brake system accumulator and Yellow hydraulic system accumulator.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EMER BRAKE PRESS IND	2-213	G 112	E15
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
BRAKE ACCUM PRESS IND	13-216	G 111	A12
PLTS LT TEST SUP	15-215	L1001	E14

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
BRAKE EMER/ACCUM PRESS IND	25-216	G 118	C 6
BRAKE EMER/ACCUM/WATER PIPE HTR CONT		G 119	B 7

(8) Connect hydraulic ground power unit to Yellow hydraulic system.

C. Test of BRAKES EMERG Warning Light

(1) On centre console, place and hold LIGHTS TEST switch in TEST position.

(a) On centre instrument panel, BRAKES FAIL and BRAKES EMERG warning lights come on.

NOTE : Other lights might come on.

(2) On centre console, release LIGHTS TEST switch.

(a) The switch returns to HI position.

(b) BRAKES FAIL and BRAKES EMERG warning lights go off

(3) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(4) On centre console, place LIGHTS TEST switch in LO position.

(a) On centre instrument panel, BRAKES EMERG warning light is dimmed.

(5) On centre console place LIGHTS TEST switch in HI position.

(a) On centre instrument panel, BRAKES EMERG warning light recovers normal brightness.

(6) On centre console, place brake selector lever in NORM position.

(a) On centre instrument panel, BRAKES EMERG warning light goes off.

D. Test of Emergency Brake System

(1) On centre console, make certain that brake selector lever is in NORM position.

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Regulated pressure between 268 and 279 bars (3890 and 4050 psi).

(a) On Flight Engineer's panel, the pressure gauge reads 275 bars (3988 psi).

(3) On centre console, place brake selector lever in EMERG position.

(4) Depress Captain's pedals to second load threshold (12° approx).

(a) Visually check that brake units are clamped.

(b) On centre instrument panel, check on dual pressure gauge that the pressure delivered to LH and RH brakes is 80 ± 5 bars (1160 ± 72.5 psi).

(5) Fully depress Captain's pedals (past second load threshold).

(a) Visually check that the brake units are clamped.

(b) On centre instrument panel, check on BRAKES dual pressure gauge that pressure is delivered to LH and RH brakes. On centre instrument panel, on dual pressure gauge, the pointers are in maximum stop position.

(6) Release Captain's pedals

(a) Visually check that the brake units are no longer clamped.

(b) On centre instrument panel, check on BRAKES dual pressure gauge the pressure is no longer delivered to LH and RH brakes.

(7) Shut down hydraulic ground power unit.

(8) In zone 151 - 152, depressurize Yellow hydraulic system by means of pressure relief valve 3339.

WARNING : DO NOT USE PRESSURE RELIEF VALVE 3661.

(a) On Flight Engineer's panel, check on the pressure gauge that the pressure does not decrease below 275 bars (3988 psi).

R (b) On centre console, place brake selector lever in
R NORM position.

RB E. Test of Emergency Brake System Safety Valves

RB (1) On centre console make certain that brake selector
RB lever is in the NORM position.

RB (2) Disconnect the emergency hose from the brake assembly
RB manifold and place the free end into a large empty
RB container (preferably transparent with a covered top).

RB (3) Pressurize the Yellow Hydraulic System (Ref. 29-21-00,
RB Servicing) ; regulated pressure to be between 268
RB and 279 bars (3890 and 4050 psi).
RB (a) On flight Engineer's panel the pressure gauge
RB should read 275 bars (3988 psi).

RB (4) On centre console place the brake selector lever in
RB the EMERG position.

RB (5) Establish communication between flight deck and brake
RB unit.

RB (6) Apply max braking at the pedals and check that the
RB fluid from the disconnect hose stops flowing within
RB 5 seconds and release pedals.
RB NOTE : A minimum hydraulic flow of 25L/min
RB (5 Gall/min) is necessary to meet this requi-
RB rement.

RB (7) Re-arm safety valve by unscrewing and then re-
RB tightening bleed screw.
RB NOTE : The prior removal of the main gear wheels
RB may facilitate access.

RB (8) Reconnect hose assembly to brake manifold.

RB (9) Bleed brake system (Ref. 32-44-00 Servicing).

RB (10) Repeat the above for each remaining brake position.

RB NOTE : Between each safety valve check, verify fluid
RB level in Yellow tank and top up if necessary
RB (Ref. 12-12-29).

RB (11) Shut down hydraulic ground power unit.

RB (12) In zone 151-152 depressurize Yellow Hydraulic
RB System by means of pressure relief valve 3339.

RB WARNING : DO NOT USE PRESSURE RELIEF VALVE 3661.

RB (a) On flight engineer's panel, check pressure does
RB not decrease below 275 bars (3988 psi).

R F. Close-up

(1) On centre console, place brake selector lever in NORM position.

(2) Disconnect hydraulic ground power unit.

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(4) Close access doors.

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5. System Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater Than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lighting, LH	D924008000
Pyramid Adapter - Lighting, RH	D924008001
Safety Stay	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Electrical Ground Power Unit	
Measuring Equipment - Brake Pedal Load and Travel	E920130000
Measuring Equipment - Main Landing Gear Wheel Braking Torque	D920261000
Hydraulic Jack - 10000 daN (23000 lbf).	

**ON A/C ALL

B	Pressure Gauges 0 to 300 bars	3BA-18940
B	(0 to 4350 psi)	

**ON A/C ALL

Measuring Equipment - Residual Braking	E920146000
Dynamometer - 100 daN (220 lbf).	
Spring Scale - 10 daN (23 lbf)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Open door 151DB under fuselage.
Check that pressure is correct in Emergency brake system accumulator and Yellow hydraulic system accumulator.

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(7) Check that the following circuit breakers are reset :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EMER BRAKE PRESS IND	2-213	G 112	E15
WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9
BRAKE ACCUM PRESS IND	13-216	G 111	A12
PLTS LT TEST SUP	15-215	L1001	E14
BRAKE EMER/ACCUM/WATER PIPE HTR CONT	25-216	G 119	B 7
BRAKE EMER/ACCUM PRESS IND		G 118	C 6

(8) Connect the pressure gauges 0 to 300 bars (0 to 4350 psi) to Emergency brake system manifolds of each brake unit.

(9) Connect hydraulic ground power unit to Yellow hydraulic system (Ref. 29-21-00, Servicing).

C. Test of BRAKES EMERG Warning Light

(1) On centre console, place and hold LIGHTS TEST switch in TEST position.

(a) On centre instrument panel, BRAKES FAIL and BRAKES EMERG warning lights come on.

<u>NOTE</u> : Other lights might come on.

(2) On centre console, release LIGHTS TEST switch.

(a) The switch returns to HI position.

(b) BRAKES FAIL and BRAKES EMERG warning lights go off

(3) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(4) On centre console, place LIGHTS TEST switch in LO position.

(a) On centre instrument panel, BRAKES EMERG warning light is dimmed.

(5) On centre console, place LIGHTS TEST switch in HI position.

(a) On centre instrument panel, BRAKES EMERG warning light recovers normal brightness.

(6) On centre console, place brake selector lever in NORM position.

(a) On centre instrument panel, BRAKES EMERG warning light goes off.

RB D. Normal Test of Emergency Brake System

RB NOTE: Carry out either this test or the Alternate Test of
RB Emergency Brake System detailed in para. E.

This test can be carried out with aircraft on its
RB wheels or on jacks.

(1) On centre console, make certain that brake selector lever is in NORM position.

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Regulate pressure between 268 and 279 bar (3890 and 4050 psi).

(a) On Flight Engineer's panel, check on the pressure gauge that pressure is 275 bar (3988 psi).

(3) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(4) Install measuring equipment E920130000 and plot the following curves.

(a) LH Captain's pedal travel with relation to pressure applied to each LH main gear brake unit.

(b) Load applied to LH Captain's pedal with relation to pressure applied to each LH main gear brake unit.

(5) Plot similar curves for Captain's RH and First Officer's LH and RH pedals.

(6) These curves serve to determine:

(a) Pedal travel before pressure is applied to the brakes. Pressure applied for a pedal displacement of between 2 and 4 degrees.

(b) Load applied to pedal to obtain a pressure at the brakes of 30 bar (435 psi).
Load should be:
- while increasing pressure between 22 and 27 daN (49.5 and 60.75 lbf).
- while decreasing pressure, less than 9 daN (20.25 lbf).

(c) Second load threshold:
Pedal displacement = 10.5 to 12.5 degrees
Load = 30 to 38 daN (66 to 85.5 lbf)
Pressure at brakes = 80 ± 5 bar
(1160 ± 72.5 psi).

(d) Pedal displacement at change in pressure curve:
Pedal displacement = 12 to 14 degrees
Pressure = 85 + 10, - 5 bar (1233 + 145, -72.5 psi).

(e) Maximum load applied to pedal to obtain maximum pressure at brake:
Load = 70 to 80 daN (157 to 182 lbf)
Pressure = 215 + 15, - 10 bar (3118 + 217, - 145 psi).

WARNING: DO NOT USE PRESSURE RELIEF VALVE 3661.

(7) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(a) On flight Engineer's panel, check on the pressure gauge that the pressure is still 275 bar (3988 psi).

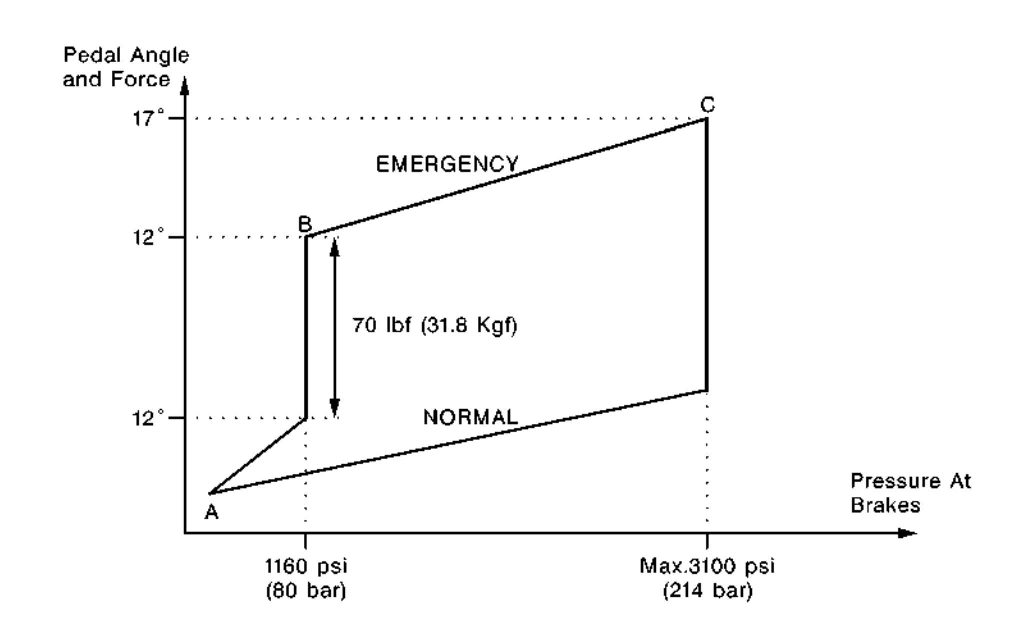
(8) Remove measuring equipment E920130000.

(9) On Centre console, place brake selector lever in NORM position.

B E. Alternate Test of Emergency Brake System

B (1) General.

B Figure 502 shows the relationship between pedal angle, pedal
B force and pressure at the brakes.



B Relationship between Pedal Angle, Pedal Force and
B Pressure at the Brakes
B Figure 502

B During Emergency brake operation the pedal angle/force
B required increases linearly with pressure at the brakes,
B until 12 degree pedal angle and 80 bar (1160 psi) brake
B pressure when the 2nd threshold is reached. In order to
B increase the brake pressure further a 70 lbf (31.8 kgf)
B increase in pedal force is required to overcome the 2nd
B threshold. Beyond the threshold, from 12 to 17 degrees the
B pedal angle/force required increases linearly with pressure
B at the brakes to a maximum of 214 bar (3100 psi).

B NOTE: All figures are for reference only.

(2) Prepare.

(a) Take the precautions in the previous WARNING paragraph.

(b) Prepare as detailed in para. B.(1) to B.(7).

(c) Connect pressure gauges 0 to 300 bar (0 to 4350 psi) 3BA-18940 to Emergency brake system manifolds of each brake unit (Ref. 32-43-00, Adjustment/Test). Cut lockwire and open corresponding valves.

(d) Connect hydraulic ground power unit to Yellow hydraulic system (Ref. 29-21-00, Servicing).

(3) Alternate Test of Emergency Brake System.

NOTE: This test can be carried out with aircraft on its wheels or on jacks.

(a) On centre console, make certain that brake selector lever is in NORM position.

(b) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Regulate pressure between 268 and 279 bar (3890 and 4050 psi).

- On Flight Engineer's panel, check on the pressure gauge that pressure is 275 bar (3988 psi).

(c) On centre console, place brake selector lever in EMERG position.

- On centre instrument panel, BRAKES EMERG warning light comes on.

(d) Perform the following test on both of the Captain's pedals to determine the relationship between pedal angle/force and pressure at brakes:

- Pressure at brake for zero pedal displacement = 0 psi. Corresponding to Figure 502 point A.

- Pressure at brake for second load threshold = 80 ± 5 bar (1160 ± 72.5 psi). Corresponding to Figure 502 point B.

NOTE: The threshold at point B can be "felt" easily as a 70 lbf (31.8 kgf) is required to achieve an increase in brake pressure.

- Pressure at brake when maximum load applied to Captain's pedals = 215 + 15, -10 bar (3118 + 217, -145 psi). Corresponding to Figure 502 point C.

(e) Perform similar tests on the First Officer's pedals.

WARNING: DO NOT USE PRESSURE RELIEF VALVE 3661.

(f) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

- On Flight Engineer's panel, check on the pressure gauge that the pressure is still 275 bar (3988 psi).

(g) Disconnect pressure gauges from brake manifolds, close valves and safety valves with lockwire.

(h) On centre console, make certain that brake selector lever is in NORM position.

(j) Disconnect hyraulic ground power unit.

(4) Close-Up.

(a) Close-Up as in paras. K(1) to K(7).

R F. Test of Emergency Brake System Using Emergency Brake System Accumulator

(1) On centre console, make certain that brake selector lever is in NORM position.

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).
Regulate pressure to between 268 and 279 bars (3890 and 4050 psi).

(a) On Flight Engineer's panel, check that Emergency brake accumulator pressure gauge indicates 275 bars (3988 psi).

WARNING: DO NOT USE PRESSURE RELIEF VALVE 3661.

(3) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(4) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(5) Fully depress pedals (past second load threshold). Check on pressure gauges at brake units that the pressure is 215 + 15, -10 bar (3118 + 217, - 145 psi).

(6) Fully release pedals.

(7) Repeat operations (5) and (6) until pressure delivered to the brakes is equal to or greater than 158 bar (2290 psi). Note number of times pedals were depressed.

(8) Check that Emergency brake system accumulator provides pressure for seven complete brake applications.

(9) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(a) On Flight Engineer's panel, check on the pressure gauge that pressure is 275 bar (3988 psi).

(10) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(11) On centre console, place brake selector lever in NORM position.

(a) On centre instrument panel, BRAKES EMERG warning light goes off.

(b) On Flight Engineer's panel, check on Emergency brake accumulator pressure gauge that pressure remains at 275 bar (3988 psi).

R G. Emergency Brake System Leakage Test

NOTE: This test can be carried out with the aircraft on its wheels.

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Regulate pressure between 268 and 279 bar (3890 and 4050 psi).

(a) On Flight Engineer's panel, check on the pressure gauge that the pressure is equal to 275 bar (3988 psi).

(2) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(3) On centre console, place brake selector lever in PARK position.

(a) Report the variation in pressure in the Emergency accumulator for 12 hours (pressure is read on the pressure gauge on Flight Engineer's panel).
After 6 hours pressure should be greater than 230 bar (3336 psi).
After 12 hours pressure should be greater than 200 bar (2900 psi).

(4) On centre console, place brake selector lever in NORM position.

R H. Brake Selector Lever Operating Effort

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) Install spring scale on lever.

(3) Operate lever using spring scale from NORM to EMERG then EMERG to PARK.

(4) Note effort which should be below 10 daN (22.48 lbf).

(5) Operate lever using spring scale from PARK to NORM.

(6) Note effort which should be below 5 daN (11.24 lbf).

(7) Remove spring scale.

(8) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R I. Measurement of Braking Static Torque

WARNING: DO NOT EXCEED A TORQUE OF 2600 daN (19176.6 lbf ft).

(1) Install measuring equipment D920130000 fitted with a dynamometer on Captain's pedals.

(2) Install measuring equipment D920261000 with a hydraulic jack on one LH main gear wheel.

(3) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(4) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(5) Load Captain's LH pedal to obtain a 215 bar (3118 psi) pressure at LH brakes.

(6) Using measuring equipment D920261000, note the value of the wheel static torque.

(7) Install measuring equipment D920261000 successively on each wheel of LH main gear.

(8) Note the value of the static torque for each wheel.

(9) Load Captain's RH pedal to obtain a 215 bar (3118 psi) pressure at the RH brakes.

(10) Install measuring equipment D920261000 successively on each wheel of RH main gear.

(11) Note the value of the static torque for each wheel.

(12) Compare the values reported to those given in the aircraft log book. Less than or equal to 2200 daNm (16226 lbf ft).

(13) Remove measuring equipment D920130000 and D920261000.

(14) On centre console, place brake selector lever in NORM position.

(a) On centre instrument panel, BRAKES EMERG warning light goes off.

(15) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R J. Measurement of Braking Residual Torques

(1) Install measuring equipment D920146000 fitted with a dynamometer on one LH main gear wheel.

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(3) On centre console, place brake selector lever in EMERG position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(4) Depress Captain's LH pedal to obtain a 215 bar (3118 psi) pressure at the LH brakes.

(5) Release Captain's LH pedal.

(6) Using measuring equipment D920146000, note the value of the braking residual torque.

(7) Perform the same operations on the other wheels of LH main gear.

(8) Using measuring equipment D920146000, perform the same operations on the wheels of RH main gear.

NOTE: Do not forget before each test to pressurize LH and RH brakes with respect to the position of the brake to check, then release brake pedal.

(9) Compare the values reported to those given in the aircraft log book. Less than or equal to 10 daNm (73.75 lbf ft).

(10) Remove measuring equipment D920146000.

(11) On centre console, place brake selector lever in NORM position.

(a) On centre instrument panel, BRAKES EMERG warning light goes off.

(12) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(13) Disconnect pressure gauges from brake manifolds.

R K. Close-Up

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(2) On centre console, make certain that brake selector lever is in NORM position.

(3) Disconnect hydraulic ground power unit.

(4) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(5) Remove safety stay.

(6) Lower the aircraft onto its wheels.

(7) Close access doors.

END OF THIS SECTION

NEXT

MASTER CYLINDER - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two master cylinders are fitted to Captain's rudder bar and activated by the Captain's and First Officer's pedals.
Each hydraulic master cylinder is internally loaded by two springs.
The first spring applies an opposing load proportional to pedal travel within the limits of Normal braking.
The second spring serves to limit Emergency braking to a pressure corresponding to pedal travel of 12° approx.
Past 12° a second load threshold must be intentionally overcome to acquire Emergency braking pressure superior to normal Emergency braking values.

2. Master Cylinder

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000

DESCRIPTION	PART NO.
Access Platform 3.672 m (12 ft.)	
Blanking Plug/Cap	
Vinyl Tubes - ID : 8 mm (0.32 in.)	
Safety Clips	
Container	

**ON A/C ALL

Hydraulic Fluid (Ref. 20-30-00 No.011)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that the visor is DOWN position.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(12) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(13) Install safety collars.

(14) In flight compartment, display a warning notice prohibiting the use of Captain's and First Officer's pedals

(15) Connect vinyl tubes to the two bleed valves of the distribution block and place the open ends into a container to collect spillage fluid.

(16) Bleed low pressure brake circuit by unscrewing the two bleed valves of the distribution block.

(17) Open access doors 113DB and 121AB.

C. Remove

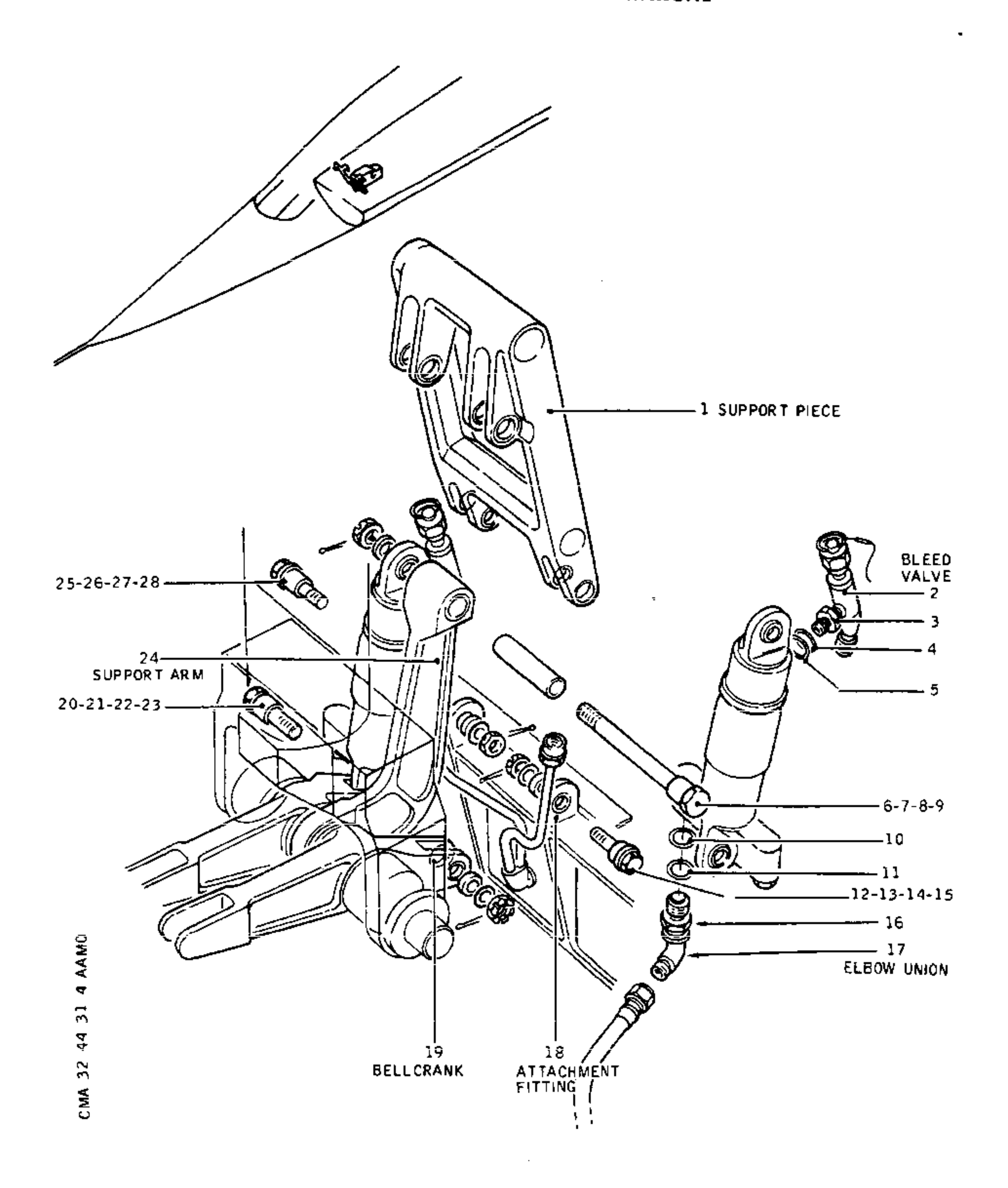
NOTE : Removal of one master cylinder is described below but it is necessary to disconnect the two cylinders at the upper part (common attachment) to remove one of them.

(1) Remove protective casing between the two pedals on Captain's side. Retain attachment screws.

(2) Disconnect support piece (1) from attachment fittings (18).

(a) Remove cotter pins, remove nuts (15) and (28) and retain washers (14) and (27) for reinstallation.

(b) Remove and retain washers (13) and (26) for reinstallation.



Master Cylinder
Figure 401

(c) Remove shouldered bolts (12) and (25).

(3) Disconnect hydraulic lines and cap open ends.

(4) Disconnect the two master cylinders at the upper part.

(a) Remove cotter pin, remove nut (9) and retain washer (8) for reinstallation.

(b) Remove shouldered bolt (6) and retain spacer (7) for reinstallation.

(c) Disengage support arm (24) in the forward direction.

(5) Disconnect master cylinder from lower attachment fitting.

(a) Remove cotter pin, remove nut (23) and retain washer (22) for reinstallation.

(b) Remove and retain washer (21) for reinstallation.

(c) Remove shouldered bolt (20).

NOTE : Do not remove bushes on bellcrank (19).

D. Preparation of replacement Component

(1) On removed master cylinder

(a) At the upper part

- Unlock nut (3)
- Unscrew and remove bleed valve (2)
- Discard seal (5) and seal retainer (4).

(b) At the lower part

- Remove blanking plug from orifice not used and discard 'O'-ring.
- Unlock nut (16)
- Unscrew and remove elbow union (17)
- Discard seal (10) and seal retainer (11).

(2) On replacement master cylinder

(a) At the upper part

- Equip bleed valve (2) with new seal (5) and seal retainer (4)

- Screw bleed valve (2) in master cylinder. Do not lock screw (3).

(b) At the lower part

- Install blanking plug with a new "O"-ring on orifice not used. Tighten blanking plug.
- Equip elbow union (17) with new seal (10) and seal retainer (11)
- Screw elbow union (17) in master cylinder. Do not lock screw (16).

NOTE : Elbow unions on LH and RH master cylinders are installed outboard of blanking plugs.

E. Install

(1) Offer up master cylinder in bellcrank (19).

(2) Connect master cylinder to lower attachment fitting.

(a) Insert shouldered bolt (20).

(b) Engage and position washer (21).

(c) Engage washer (22).

(d) Tighten nut (23) and safety with cotter pin.

(3) Connect master cylinders at the upper part :

(a) Offer up support arm (24) and support piece (1).

(b) Connect support arm (24) to support piece (1) by engaging spacer (7).

(c) Insert shouldered bolt (4), taking care to connect the two masters cylinders to support arm (24) and support piece (1).

(d) Engage washer (8).

(e) Tighten nut (9) but do not lock.

(f) Move support piece (1) upwards.

CAUTION : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE.
IF REQUIRED FOR REINSTALLATION IT

SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(4) Remove caps from hydraulic lines.

(5) Position elbow union (17), connect hydraulic line and lock nut (16).

(6) Position bleed valve (2), connect hydraulic line and lock nut (3).

(7) Connect support piece (1) to attachment fittings (18).

(a) Offer up support piece (1) against attach fitting (18).

(b) Insert shouldered bolts (12) and (25).

(c) Engage and position washers (13) and (26).

(d) Engage washers (14) and (27).

(e) Torque nuts (15) and (28) to between 27 and 32 lbf.in. (0.3 and 0.36 m.daN) and safety with cotter pins.

(8) On upper attach fitting, torque nut (9) to between 80 and 90 lbf.in. (0.9 and 1.1 m.daN) and safety with cotter pin.

(9) Replenish and bleed low pressure brake system (Ref. 32-44-00, Servicing).

(10) Remove vinyl tubes.

(11) Remove spillage fluid container.

(12) Install protective casing between Captain's pedals.

(13) Pressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(14) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(15) Remove safety collars.

(16) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL posi-

tion.

(17) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

(18) Remove access platform.

(19) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(20) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(21) Close gear doors by operating handle located on nose gear leg. Install locking cap.

(22) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Test

Not applicable.

G. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors 121AB and 113DB.

(4) Remove warning notice from the flight compartment.

BRAKE HYDRAULIC MASTER CYLINDER HEADER TANK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The master cylinder header tank is located under the First Officer's floor. It is accessible through access door 121DB. It supplies the brake master cylinders of the low pressure Emergency brake system with hydraulic fluid.

2. Master Cylinder Header Tank

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.672 m (12 ft.)	
Container	
Blanking Plug/Cap	

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	-
Vinyl Tubes - Internal dia. 8mm (0.315 in.)	
Lockwire - 0.60 mm (0.024 in.), Corrosion Resistant Steel	

**ON A/C ALL

Hydraulic Fluid (Ref. 20-30-00, No.011)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that brake selector lever is in NORM position.

(4) Make certain that the visor is not uplocked.

(5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(8) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(9) On centre console, place landing gear Normal control in NEUTRAL position.

(10) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(12) Shut down and depressurize Yellow system. (Ref. 29-21-00, Servicing).

(13) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(14) Install safety collars on gear door jacks.

(15) In flight compartment, display a warning notice prohibiting the use of Captain's and First Officer's pedals.

(16) Open access door 121DB under fuselage.

(17) Remove floor panel 212GF in flight compartment.

(18) Vent the system by removing header tank bleed valve.

(19) In nose gear bay, connect vinyl tubes to the two bleed valves of the distribution block and place the other ends in a container to collect fluid.

(20) Bleed low pressure brake system by removing the two bleed valves of the distribution block.

C. Remove

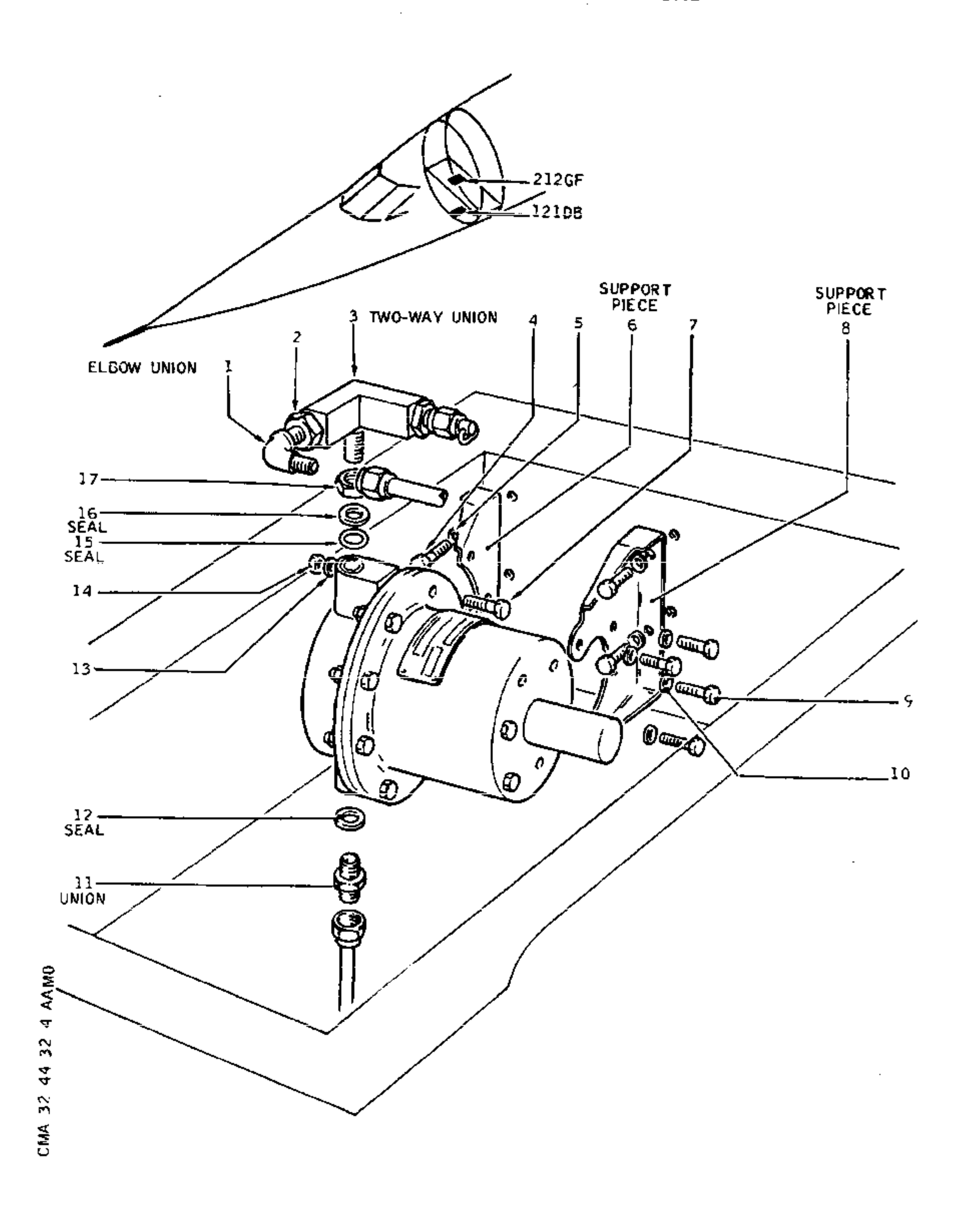
(1) Disconnect hydraulic lines.

(2) Cut and remove lockwire, remove attachment screws (4), retain washers (5) and remove header tank/support piece assembly.

(3) Cap hydraulic line open-ends.

D. Preparation of Replacement Component

(1) On removed component :



Master Cylinder Header Tank
Figure 401

(a) Disconnect support pieces (6) and (8) from header tank by removing bolts (7) and (9).
Retain washers (13) and (10), and nuts (14) for reinstallation.

(b) Unlock lock nut (17). Remove two-way union (3) and straight union (11). Discard seals (12), (15) and (16).

(c) Loosen lock nut (2) on two-way union (3).

(2) On Replacement Component :

(a) Attach support piece (6) to header tank by means of bolts (7), washers (13) and nuts (14).

(b) Attach support piece (8) to header tank by means of screws (9) equipped with washers (10).

(c) Install straight union (11) fitted with new seal (12).

(d) Install two-way union (3) fitted with new seals (16) and (15). Do not lock nut (17).

E. Install

(1) Remove blanking caps from lines.

(2) Offer up and engage the equipped replacement assembly.

(3) Install screws (4) fitted with washers (5). Tighten screws and safety with lockwire (Ref. 20-21-13).

(4) Position two-way union (3) and elbow union (1).

(5) Connect line to elbow union.

(6) Tighten lock nuts (2) and (17).

(7) Tighten and lock line nut to elbow union.

(8) Connect line to straight union (11).

(9) Tighten and lock line nut to straight union (11).

(10) Replenish and bleed low pressure brake system (Ref. 32-44-00, Servicing).

(11) Remove vinyl tubes. Tighten blanking caps to bleed valves.

(12) Remove spillage fluid container.

(13) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
Make certain that no trace of hydraulic fluid remains.

(14) Remove safety collars.

(15) Remove access platform.

(16) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

(17) Pressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(19) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(20) Close gear doors by operating the handle located on nose gear leg. Install locking cap.

(21) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

F. Test

Not applicable.

G. Close-Up

(1) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors and install floor panel.

(4) Remove warning notices from flight compartment.

BRAKE DISTRIBUTION BLOCK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The brake distribution block serves to supply the brakes with pressure during Emergency and Parking braking.
The brake distribution block is located in the nose landing gear bay, RH side, at the level of the gear hinge points.

2. Brake Distribution Block

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Pin Assy - Regulator Rigging	D925362001
Circuit Breaker Safety Clips	
Access Platform 3.97 (13 ft)	
Lockwire Dia 0.80 mm (0.032 in.)	

DESCRIPTION	PART NO.
(Corrosion Resistant Steel)	
Container	
Blanking Plugs/Caps	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(3) Make certain that the visor is not uplocked.

(4) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref.29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.

DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.

IF A HYDRAULIC GROUND POWER UNIT IS USED DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(11) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(12) Depressurize Emergency braking system by means of valve 3661.

(13) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(14) Install safety sleeves on door actuating jacks.

C. Remove (Ref. Fig. 401)

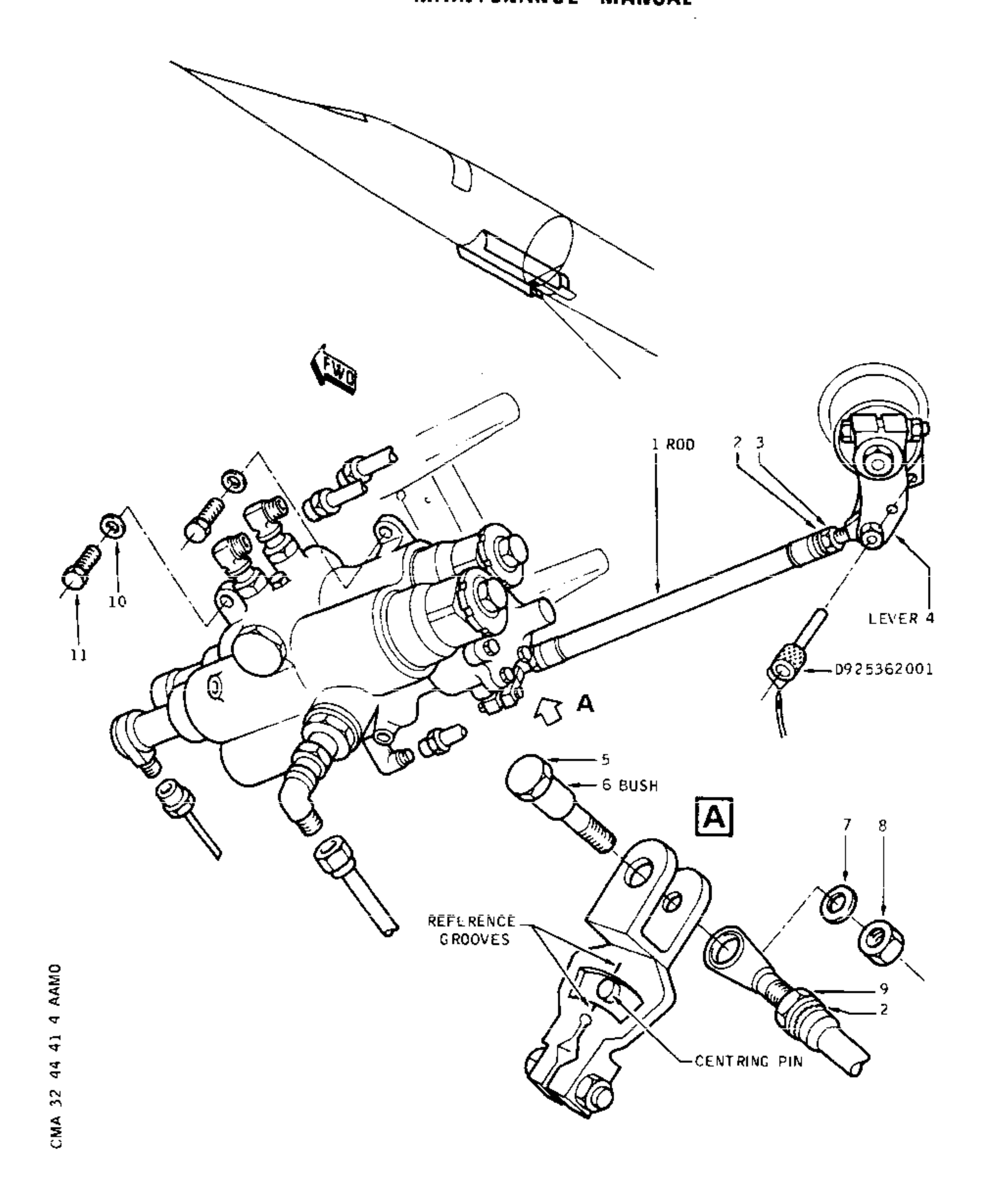
(1) Mark, disconnect and cap hydraulic lines.

(2) Disconnect brake distribution block control rod (1).

(a) Remove cotter pin, nut (8) and retain washer (7) for reinstallation.

(b) Remove pin (5) and bush (6).

(3) Cut lockwire and remove screws (11), retain washers (10) for reinstallation and remove brake distribution block.



Brake Distribution Block
Figure 401

D. Preparation of Replacement Component

NOTE : The replacement brake distribution block is filled with hydraulic fluid No. 011 (Ref. 20-30-00).

On removed brake distribution block, remove the hydraulic line-to-component unions, and install them on the replacement distribution block with new seals.
Wirelock the unions.

E. Install

(1) Position the brake distribution block and install with washers (10) and screws (11).
Wirelock screws (11) in pairs.

(2) On centre console, place brake selector lever in EMERG position.

(3) Insert rigging pin D925362001 in lever (4) and tension regulator bearing assy housing.

(4) Connect rod (1).

(a) Install pin (5) with its bush (6), washer (7) and nut (8).
Do not tighten nut (8) at this stage.

(b) Make certain that the reference grooves on the brake distribution block lever are aligned with the centring pin.

(c) If necessary adjust length of rod (1) as follows :

- Cut lockwire and loosen nuts (3) and (9), back off lock washers (2) and adjust rod (1) to required length.
- Position lock washers (2) and tighten nuts (3) and (9).
Torque nuts (3) and (9) to between 30 and 35 lbf.in. (0.34 and 0.40 m.daN) and wirelock.

(d) Torque nut (8) to between 25 and 30 lbf.in. (0.30 and 0.34 m.daN) and safety with a cotter pin.

(5) Remove rigging pin D925362001.

(6) On centre console, place brake selector lever in NORM position.

(7) Connect hydraulic lines according to marks made during removal.

F. Test

(1) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(2) Bleed emergency braking system (Ref. 32-44-00, Servecing)

(3) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(4) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(5) On centre console, place brake selector lever in EMERG then PARK position.

(6) During this operation check brake distribution block for external leakage.

(7) On centre console, place brake selector lever in NORM position.

(8) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove access platform.

(3) Remove safety clips and tags and reset circuit breakers

(4) Remove safety sleeves from door actuating jacks.

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Close doors by operating handle located on nose gear leg. Install locking cap.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) De-energize the aircraft electrical network and disconnect the electrical ground power unit (Ref. 24-41-00, Servicing).

(11) Close access doors.

(12) Remove warning notices.

PRESSURE TRANSMITTER - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SURFACES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A pressure transmitter located in the hydraulics bay receives hydraulic pressure from the Emergency brake system accumulator and transmits a corresponding signal to the pressure gauge located on the Flight Engineer's panel.
A pressure transmitter located in each main gear bay receives hydraulic pressure from the Emergency brake system and sends a corresponding signal to the Emergency brake dual pressure gauge located on the centre instrument panel.

2. Transmitter - Emergency Brake Supply Pressure (G117)

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion - Resistant Steel)	
Access Platform 3.48 m (11 ft. 5 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paraph.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
BRAKE ACCUM PRESS IND	13-216	G 111	A12
BRAKE EMER/ACCUM PRESS IND	25-216	G 118	C 6

(3) Open access door 151DB

(4) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing) and depressurize Emergency brake system by means of valve 3661.

(5) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical plug.

(2) Remove screws (1) and retain washers (2) for reinstallation.

(3) Remove pressure transmitter and discard 'O'-ring (4).

D. Preparation of Replacement Component

(1) Install a new 'O'-ring (4) on side bearing reference groove and make certain that back-up ring (3) is in position.

E. Install

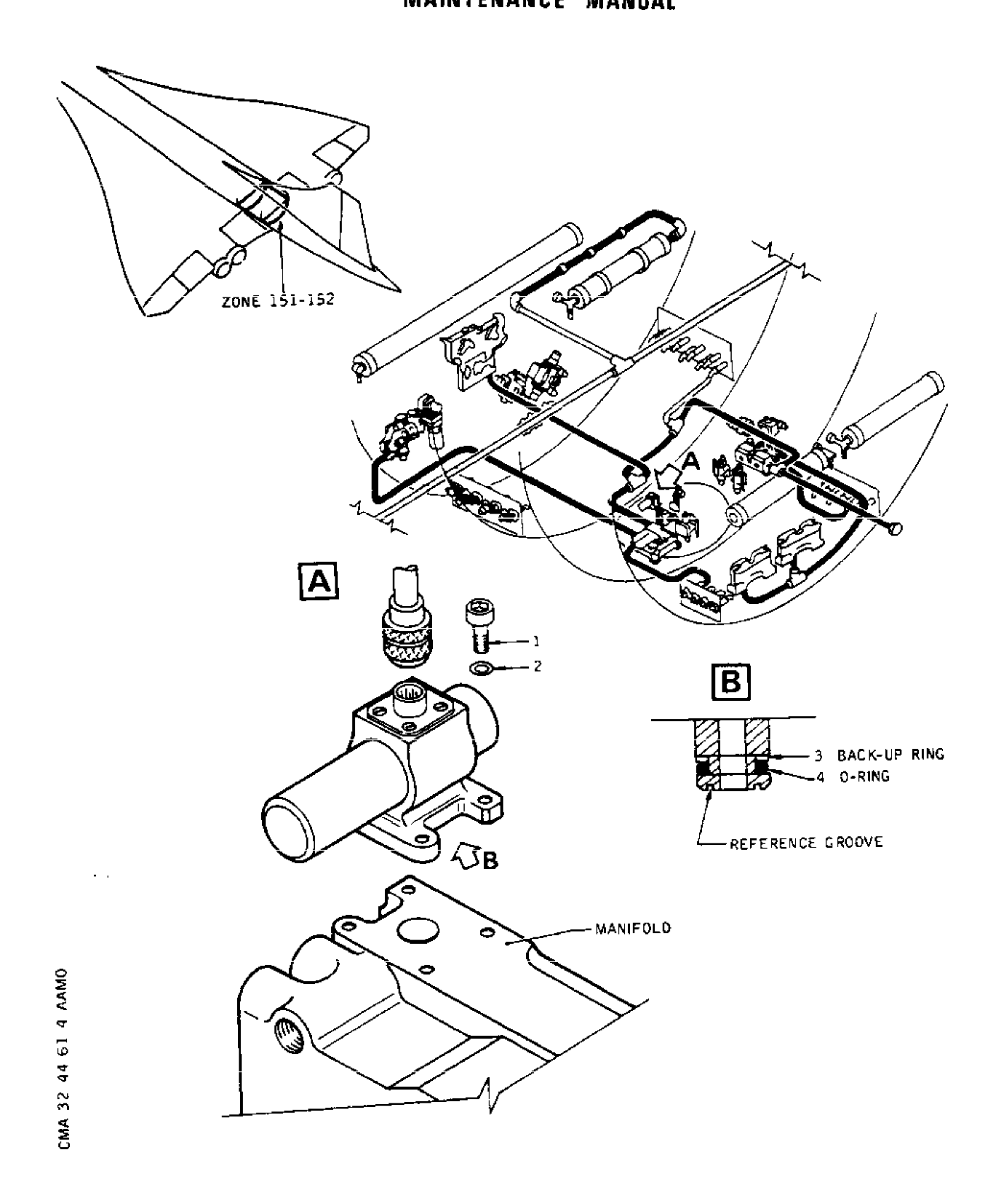
(1) Position transmitter and secure using washers (2) and screws (1).
Torque screws (1) to between 0.45 and 0.55 m.daN (40 and 49 lbf. in.)
Wirelock screws in pairs.

(2) Connect electrical plug.

(3) Remove safety clips and tags and reset circuit breakers.

(4) Pressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(5) Bleed Emergency brake system (Ref. 32-44-00,



Pressure Transmitter
Figure 401

Servicing).

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network. (Ref. 24-41-00, Servicing).

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(3) On centre console, place brake selector lever in PARK position.

(4) On Flight Engineer's panel, check that pressure indicated on pressure gauge is between 3890 and 4045 psi (268 and 279 bars).

(5) On centre console, place brake selector lever in NORM position.

(6) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(7) During test check pressure transmitter for external leakage.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Close access doors.

3. Transmitter - Emergency Brake Pressure (G115 - G116)

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.8 mm (0.032 in.) (Corrosion - Resistant Steel)	
Access Platform 3.48 m (11 ft. 5 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EMERG BRAKE PRESS IND	2-213	G 112	E15
BRAKE EMERG/ACCUM/WATER PIPE HTR CONT	25-216	G 119	B 7

(3) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(4) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

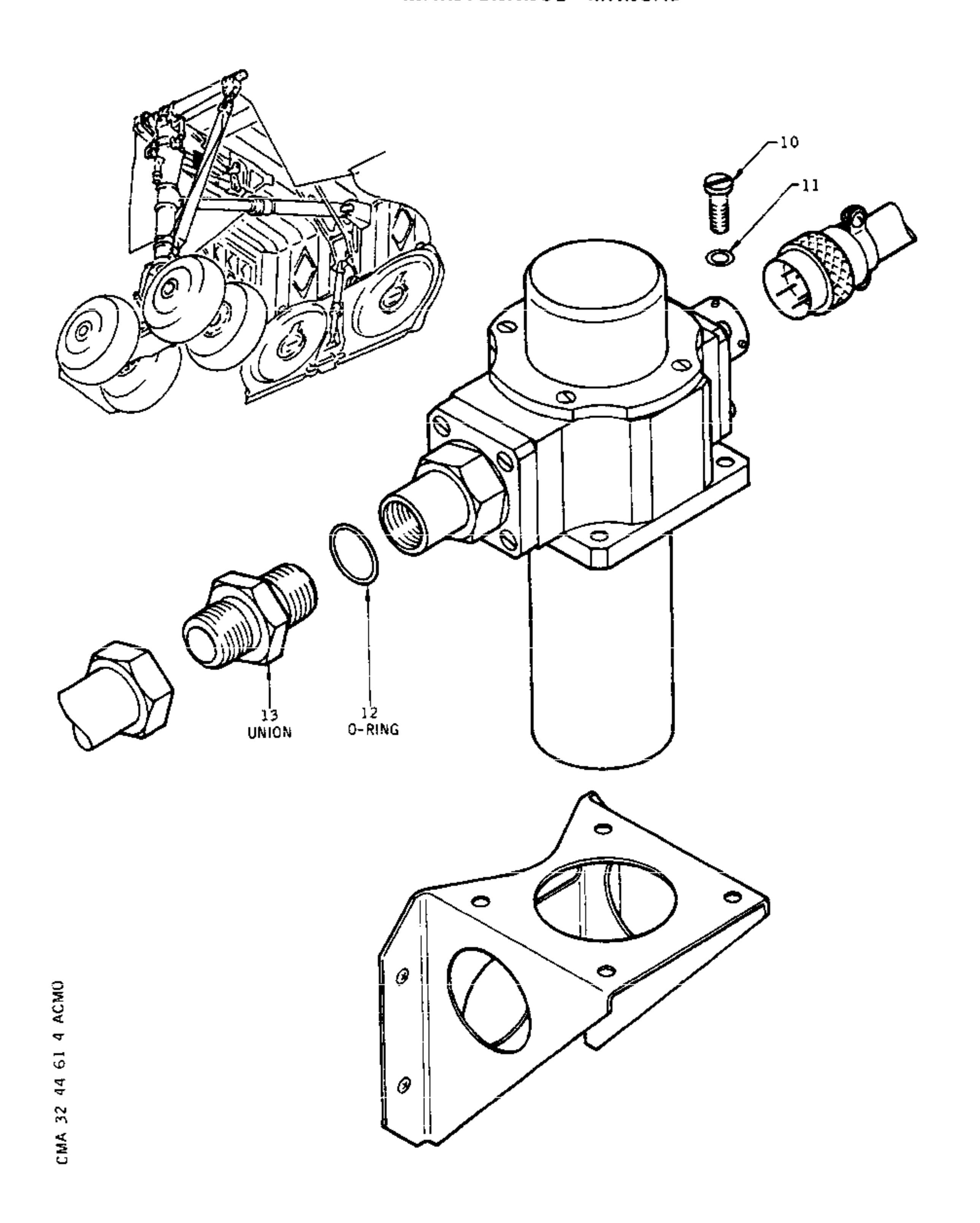
C. Remove (Ref. Fig. 402)

(1) Disconnect and cap electrical plug.

(2) Disconnect hydraulic line.

(3) Remove screws (10), retain washers (11) and remove pressure transmitter.

D. Preparation of Replacement Component



Pressure Transmitter
Figure 402

(1) On removed transmitter, remove union (13) and discard 'O'-ring (12).

(2) On replacement transmitter, install union (13) with a new 'O'-ring (12).

E. Install

(1) Position transmitter and secure using washers (11) and screws (10).

(2) Connect hydraulic line.

(3) Connect electrical plug.

(4) Remove safety clips and tags and reset circuit breakers.

(5) Pressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(6) Bleed Emergency brake system (Ref. 32-44-00, Servicing).

F. Tests

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(3) On Centre console place brake selector lever in EMERG position and depress pedals to second load threshold.

- On centre instrument panel, the pressure indicated on dual pressure gauge should be between 1090 and 1230 psi (75 and 85 bars).
- Release pedals.

(4) On centre console, place brake selector lever in PARK position.

- On centre instrument panel, on dual pressure gauge the pointers are in maximum stop position 1500 psi (103 bars).

(5) On centre console, place brake selector lever in NORM position.

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(6) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(7) During tests check transmitter for external leakage.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Close access doors.

SLIDING TUBES - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT THE AIRCRAFT WHEELS ARE CHOCKED.

1. General

Sliding tubes deliver hydraulic pressure to the brakes and compensate for shock absorber shortening during landing gear retraction.
The sliding tubes are mounted on the lower part of the shock absorber and slide in a guide attached to the landing gear leg.

2. Sliding Tubes

A. Equipment and Materials

DESCRIPTION	PART NO.
Removable Chocks	
Container	
Lockwire, Dia. 0.80 mm (0.032 in.) Corrosion Resistant Steel	
Common Grease (Ref. 20-30-00 No.051)	
R Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear

and door Emergency control lever is in NEUTRAL position.

(4) On centre console, make certain that brake selector lever is in NORM position.

(5) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

R

(6) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Depressurize Emergency braking system by means of valve 3661.

(7) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

R After SB 32-080-01 For A/C 001-007,

(6) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00 and 29-21-00, Servicing).

(7) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(8) Remove protective cover from lower part of sliding tube.

R

C. Remove
(Ref. Fig. 401)

(1) On upper part of sliding tube :

(a) Disconnect hydraulic line.

(b) Blank open line end and port on sliding tube.

(2) On lower part of sliding tube :

(a) Disconnect hydraulic line.

R After SB 32-080-01 For A/C 001-007,

C. Removal
(Ref. Fig. 402)

(1) On upper part of sliding tube

(a) Mark and disconnect hydraulic lines

(b) Blank open line ends and ports on sliding tube

(2) On lower part of sliding tube

(a) Mark and disconnect hydraulic lines.

(b) Remove nuts (11) and retain flange (10) for reinstallation.

(c) Remove securing bolts (6).

(3) On upper guide (3).

(a) Remove nuts (5).

(b) Fold back tab washer (2) and remove bolt (1).

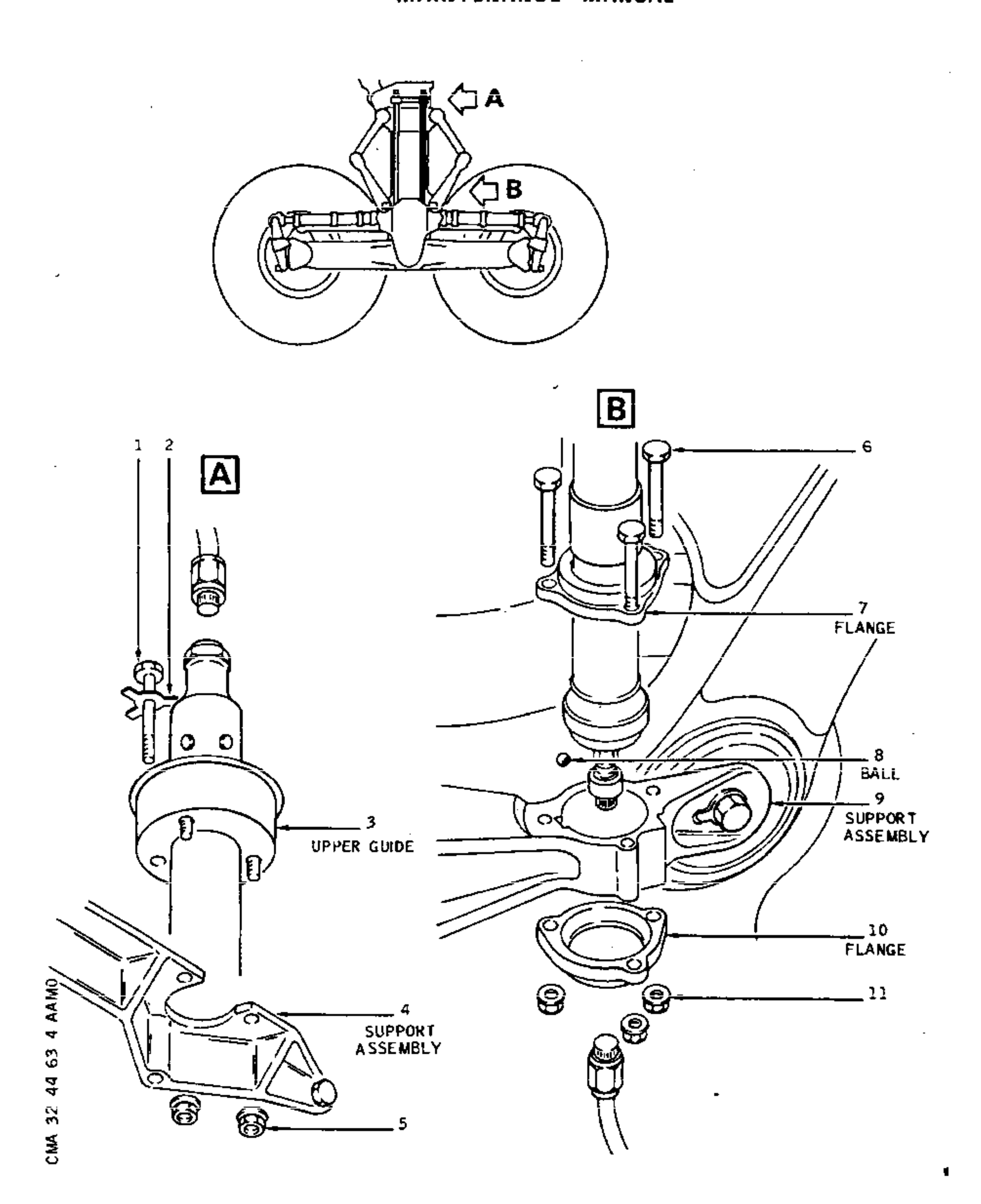
(c) Disengage guide (3) from support assembly (4).

(4) Remove sliding tube :

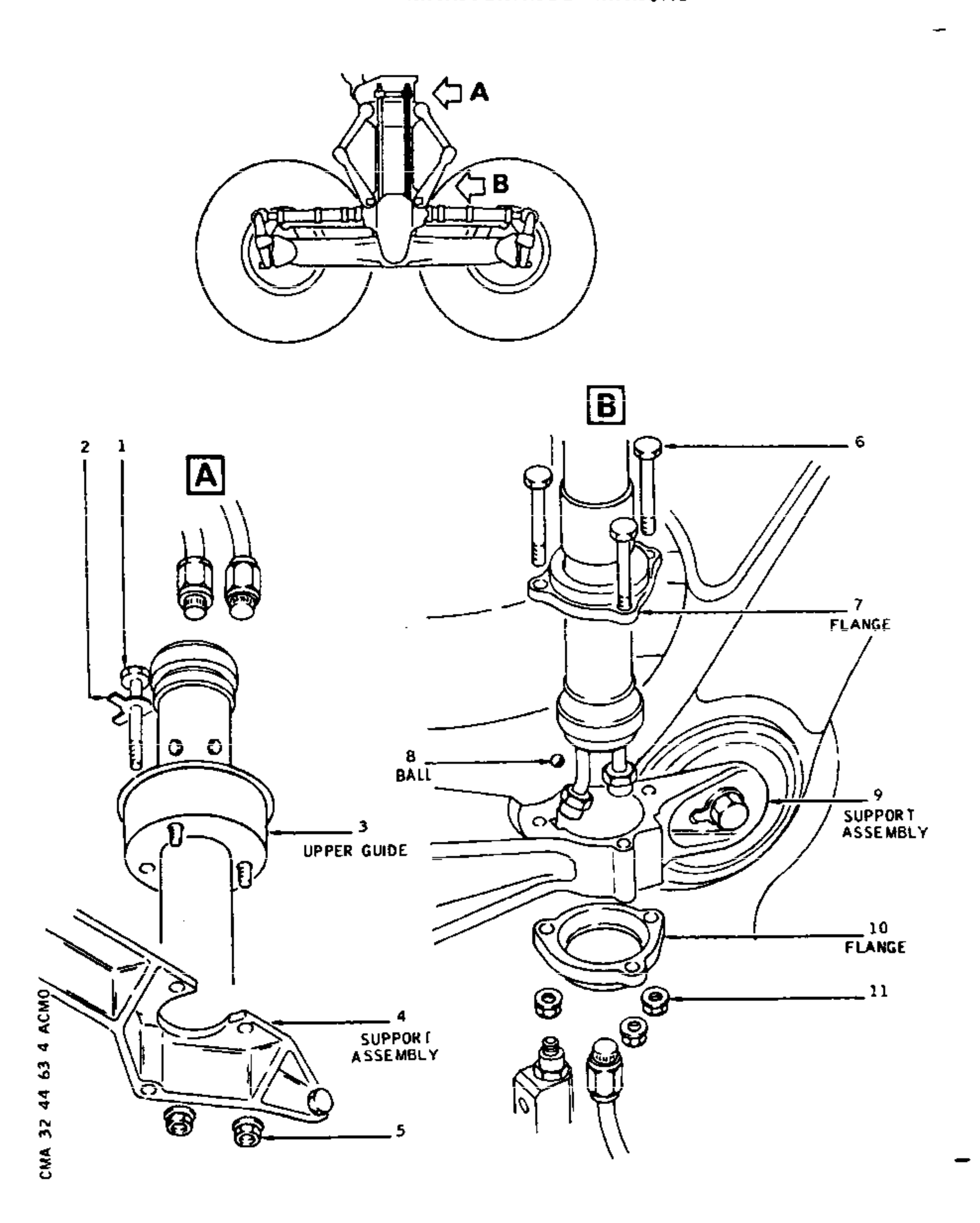
(a) Retain ball (8) on lower part of tube for reinstallation.

R

(5) Blank open line end, and port on lower part of sliding tube.



Sliding Tube - Emergency Brakes
Figure 401



Sliding Tube - Normal and Emergency Brakes
Figure 402

R

R After SB 32-080-01 For A/C 001-007,

(5) Blank open line ends and ports on lower part of sliding tube.

D. Preparation of Replacement Component

Not applicable

E. Install

(1) Remove blanking cap from hydraulic line.

R

(2) On lower part of sliding tube

(a) Remove blanking caps

R After SB 32-080-01 For A/C 001-007,

(2) On lower part of sliding tube

(a) Remove blanking caps
(b) Install sliding tube in its housing.

(c) Position tube, and insert ball (8).

(d) Position flange (7).

(e) Position flange (10) and secure support assembly (9) and flanges (7) and (10) with bolts (6) and nuts (11)
Tighten nuts (11).

(3) On upper pat of sliding tube :

(a) Position guide (3) on support assembly (4).

(b) Install bolt (1) with lock washer (2).

(c) Tighten bolt (1) and nuts (5).

(d) Fold back lock washer (2) against bolt (1) head.

R

(4) Connect hydraulic line to lower part of sliding tube.

(5) On upper part of sliding tube :

(a) Remove blanking cap.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE. IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(b) Connect hydraulic line.

R After SB 32-080-01 For A/C 001-007,

(4) Connect hydraulic lines to lower part of sliding tube.

CAUTION : DO NOT INVERT HYDRAULIC LINES.

(5) On upper part of sliding tube.

(a) Remove blanking caps.

WARNING : WHEN A HOSE WITH A BEND RADIUS IS REMOVED FROM AN INSTALLATION, CARE SHALL BE TAKEN NOT TO STRAIGHTEN THE HOSE FROM ITS ACQUIRED SHAPE. IF REQUIRED FOR RE-INSTALLATION IT SHALL BE FITTED AS NEAR AS POSSIBLE TO THIS SHAPE WITHOUT ANY UNDUE FORMING.

(b) Connect hydraulic lines.

CAUTION : DO NOT INVERT HYDRAULIC LINES.

(6) Grease sliding tube with Product No.051 (Ref. 12-22-32).

F. Test

Not applicable

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain, in particular, that no trace of hydraulic fluid remains.

(2) Remove safety clip and tag and reset circuit breaker (M626).

R

(3) Pressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

R After SB 32-080-01 For A/C 001-007,

(3) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(4) Bleed Emergency braking system at brake units (Ref. 32-44-00, Servicing).
During bleeding check hydraulic lines for leakage.
On Flight Engineer's panel, on pressure gauge, check that Emergency brake system accumulator is correctly charged.

R

(5) If necessary, replenish Yellow hydraulic tank, (Ref. 12-12-29).

R After SB 32-080-01 For A/C 001-007,

(5) If necessary, replenish Green and Yellow hydraulic tanks (Ref. 12-12-29).

(6) Install protective cover on lower part of sliding tube. Safety screws with lockwire (Ref. 20-21-13).

(7) Remove warning notices.

THERMAL PRESSURE RELIEF AND MANUAL UNLOADING VALVE

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The thermal pressure relief and manual unloading valve protects the Emergency braking system hydraulic components against excessive temperature or pressure.
This valve also serves for manual depressurization of the Emergency brake system accumulator.
The valve is located in the hydraulics bay, LH side.

2. Thermal Pressure Relief Valve

Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit - Hydraulic, Power and Preliminary Testing	EMH 398E
Wheel Chocks	
Access Platform 3.14 m (10 ft. 3 in.)	
Container	
Lockwire Dia 0.80 mm (0.032 in.) Corrosion Resistant Steel	
Circuit Breaker Safety Clips	

B. Prepare

(1) Chock the aircraft wheels.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL posi-

tion.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Open access door 151DB.

(5) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing) and depressurize Emergency brake accumulator by means of valve 3661.

(6) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(7) Connect hydraulic ground power unit to Yellow hydraulic system.

WARNING : DO NOT PRESSURIZE

(8) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

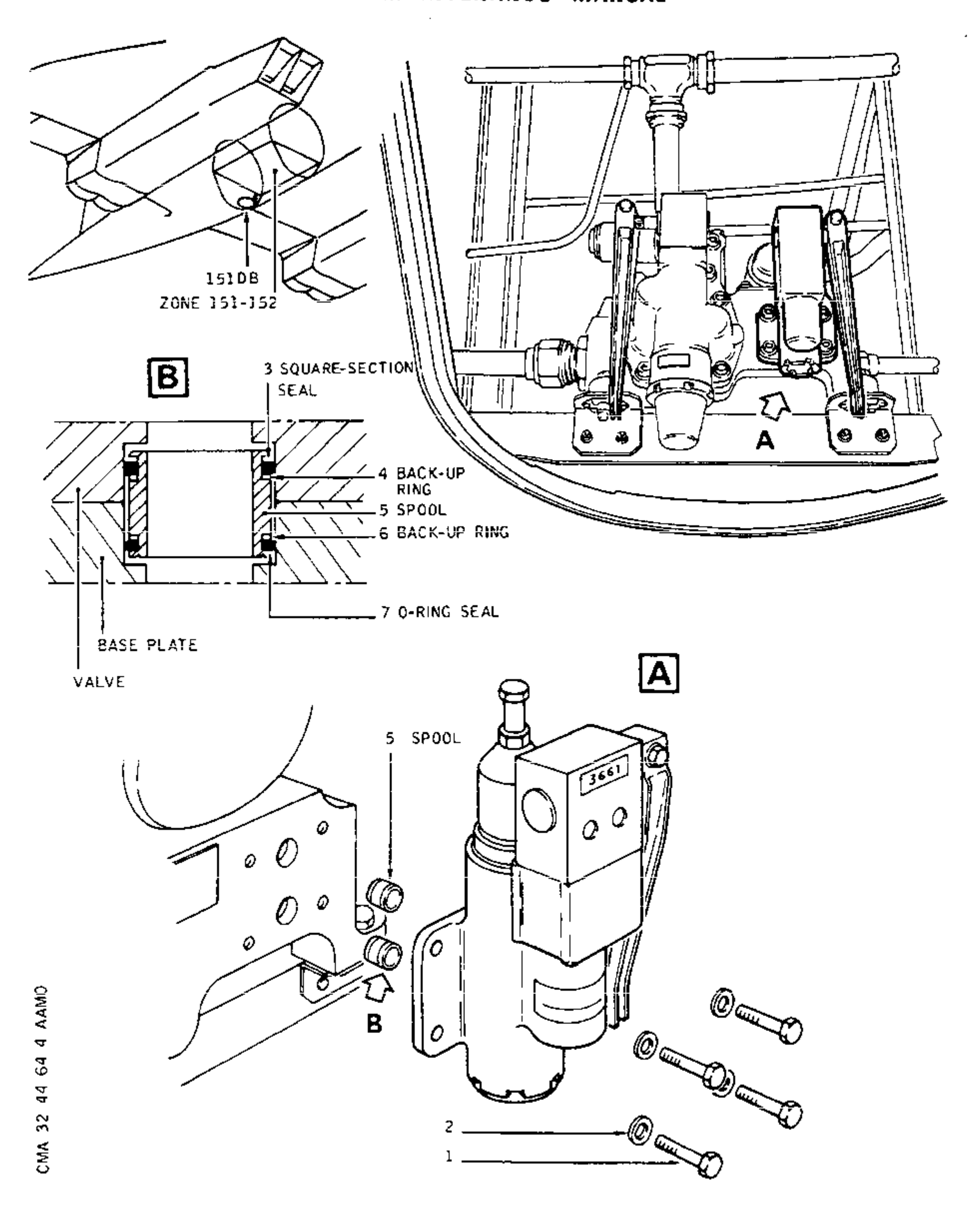
(9) Position access platform

(10) Position hydraulic fluid recovery container.

C. Remove (Ref. Fig. 401)

(1) Cut and remove lockwire and remove screws (1), retain washers (2) for reinstallation.

(2) Remove valve and remove spools (5) equipped with their



Thermal Pressure Relief Valve
Figure 401

seals from base plate.

D. Preparation of Replacement Component

The replacement valve is filled with product No. 011 (Ref. 20-30-00).

Make certain that replacement seals are correctly equipped with back-up rings (4) and (6), O-ring (7) and square-section seal (3).
O-ring must be installed on end of spool bearing the reference groove.

E. Install

(1) Install spools (5) equipped with their seals on base plate with reference groove facing base plate.

(2) Install valve with washers (2) and screws (1). Torque screws (1) to between 0.45 and 0.55 m.daN (39.828 and 48.679 lbf. in.). Safety screws with lockwire (Ref. 20-21-13).

(3) Remove safety clip and tag and reset circuit breaker.

F. Tests

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) Make certain that the pressure gauge on Emergency brake system accumulator (3654) reads 275 bars 3988 psi).

(3) Shut down Yellow hydraulic system (Ref. 29-21-00, Servicing).

(4) Operate thermal valve lever to depressurize system. Check that accumulator (3654) pressure gauge reads 158 bars (2306 psi) at ambient temperature of +20°C.

(5) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing) to charge accumulator (3654) to 275 bars (3988 psi).

(6) Make certain that replacement valve bears no trace of hydraulic fluid leakage.

(7) Shut down and depressurize Yellow hydraulic system (Ref. 29=21=00, Servicing).

G. Close-Up

(1) Remove hydraulic fluid recovery container.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Disconnect hydraulic ground power unit.

(4) Close access doors.

(5) Remove access platform.

Printed in England

EMERGENCY ACCUMULATOR - SERVICING

R

1. General

R Charging of the Emergency accumulator.

2. Emergency Accumulator

A. Equipment and Materials

DESCRIPTION	PART NO.
Air/Hydraulic Set	
Wheel Chocks	
Compressed Nitrogen Source to Supply R 200 bars (2900 psi) Pressure	
Access Platform 3.141 m (10 ft.3 in.)	
R Thermometer	

B. Prepare

(1) Make certain that wheel chocks are in place.

R (2) On centre console, make certain that brake selector
R lever is in NORM position.

R (3) Depressurize Yellow hydraulic system (Ref. 29-21-00,
R Servicing).

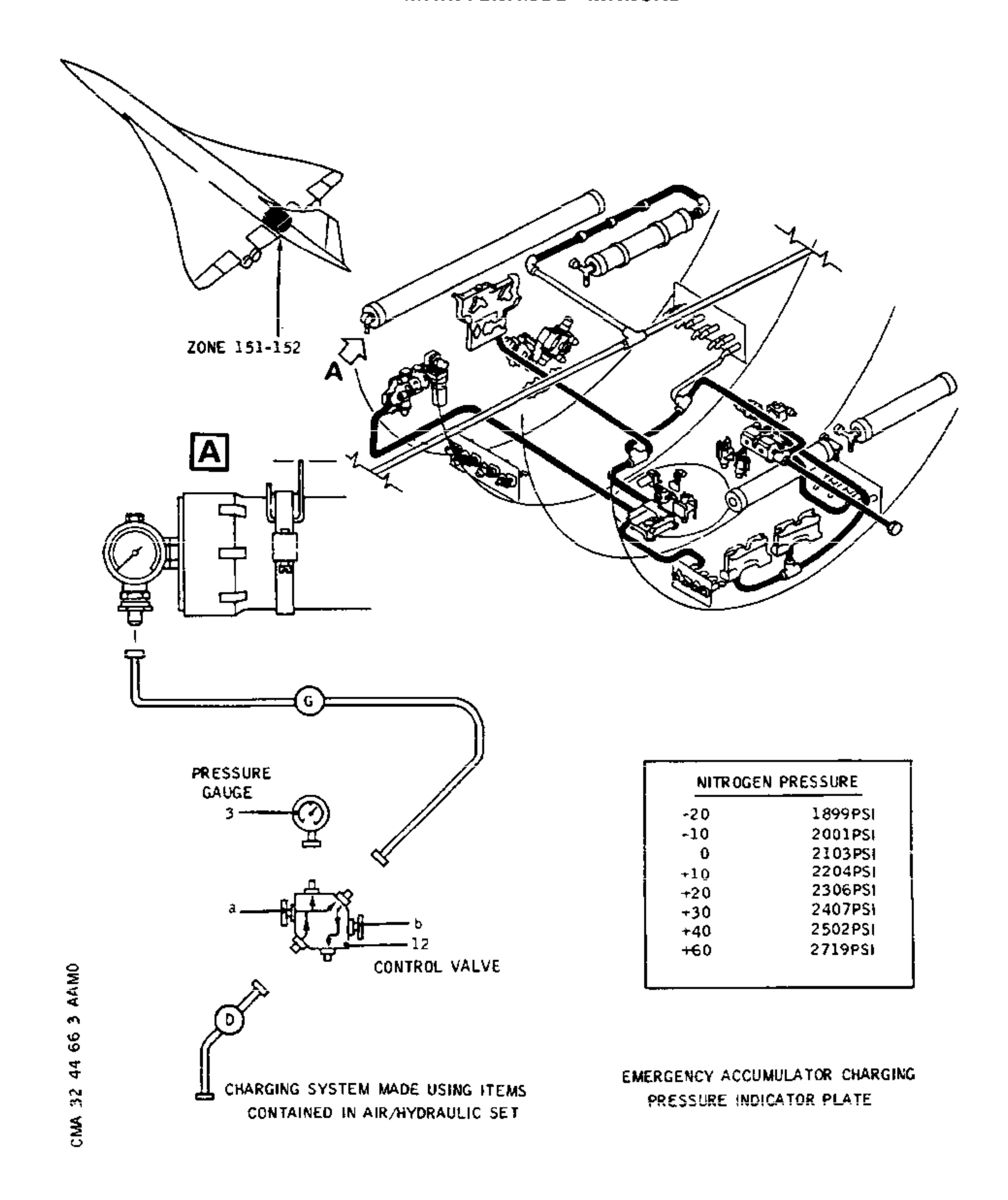
R (4) Depressurize Emergency brake system through correspond-
R ing valve (3661).

R (5) Set out a charging system using the items contained in the air/hydraulic set.

NOTE : The part numbers of the charging system items correspond to those mentioned in the air/hydraulic set.

C. Charging

NOTE : The charging procedure is given for a +20°C ambient temperature.



NITROGEN PRESSURE	
-20	1899PSI
-10	2001PSI
0	2103PSI
+10	2204PSI
+20	2306PSI
+30	2407PSI
+40	2502PSI
+60	2719PSI

Emergency Accumulator
Figure 301

R An indicator plate located near the Emergency accumulator gives the charging values with respect to ambient temperatures.

(1) Remove charging valve cap.

(2) Connect the charging system previously set out to charging valve.

(3) Position control valve (12) in the following configuration.

(a) Valves (a) and (b) closed.

(b) Bleed valve cap removed.

R (4) Set nitrogen source pressure according to ambient
R temperature. Open valve.

(5) Loosen charging valve control nut by one turn and a half.

(6) Open very slowly valve (a) of the control valve and monitor pressure on pressure gauge (3).

(7) Wait one minute or two until the pressure is stabilized.

(8) Relieve pressure in Yellow hydraulic system and in
R Emergency brake system through associated valves.

(9) Maintain a nul pressure until the nitrogen pressure in
R the accumulator is stabilized.

R (10) With the accumulator charged, tighten charging valve control nut.
R Torque to between 44 and 70 lbf.in. (0.5 and 0.8
R m.daN).

(11) Shut down nitrogen supply and open valve (b) of valve (12) in order to relieve pressure.

(12) Disconnect charging system and install valve cap.

D. Close-Up

R (1) Pressurize Yellow hydraulic system (Ref. 29-13-00,
R Servicing).

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

Make certain that no trace of hydraulic fluid remains.

(3) Close access doors.

(4) Remove access platform.

Printed in England

EMERGENCY ACCUMULATOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY SERVICES ARE IN POSITION.

1. General

The Emergency accumulator is located in zone 151-152 and is accessible through door 151DB.
With Yellow hydraulic system depressurized, the Emergency accumulator provides the Emergency brake system with pressure for seven complete applications of the brakes.

2. Emergency accumulator

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH 398E
Wheel Chocks	
Access Platform 3.141 m (10 ft.3 in.)	
Blanking Plugs/Caps	
Container	

B. Prepare

(1) Position wheel chocks.

(2) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Depressurize Emergency brake system

through associated valve (3661).

(3) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(4) Connect hydraulic ground power unit to Yellow hydraulic system.

WARNING : DO NOT PRESSURIZE.

C. Remove

(1) Slowly relieve nitrogen pressure in accumulator.

(2) Unscrew hydraulic line nut.

(3) Release clamps (1).

(4) Hold accumulator and remove clamps (1).

(5) Remove accumulator.

(6) Cap the open line.

D. Preparation of Replacement Component

NOTE : The replacement accumulator is filled with Product No.011 (Ref. 20-30-00).

(1) On removed accumulator, remove union (2). Discard seal.

(2) Install a new seal on union (2). Install union (2) on replacement accumulator and tighten.

E. Install

(1) Remove blanking cap from line.

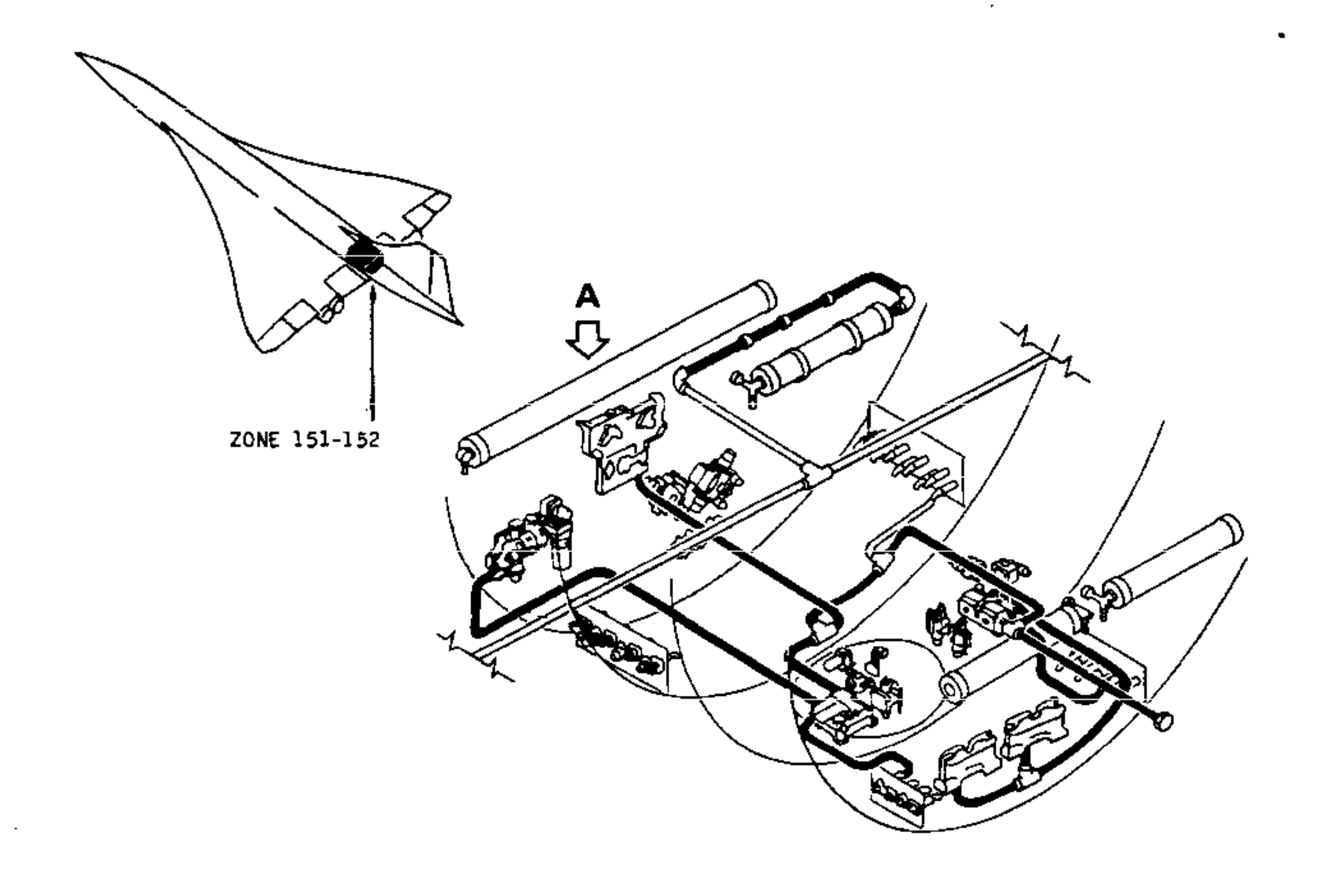
(2) Offer up accumulator taking care to position charging valve correctly.

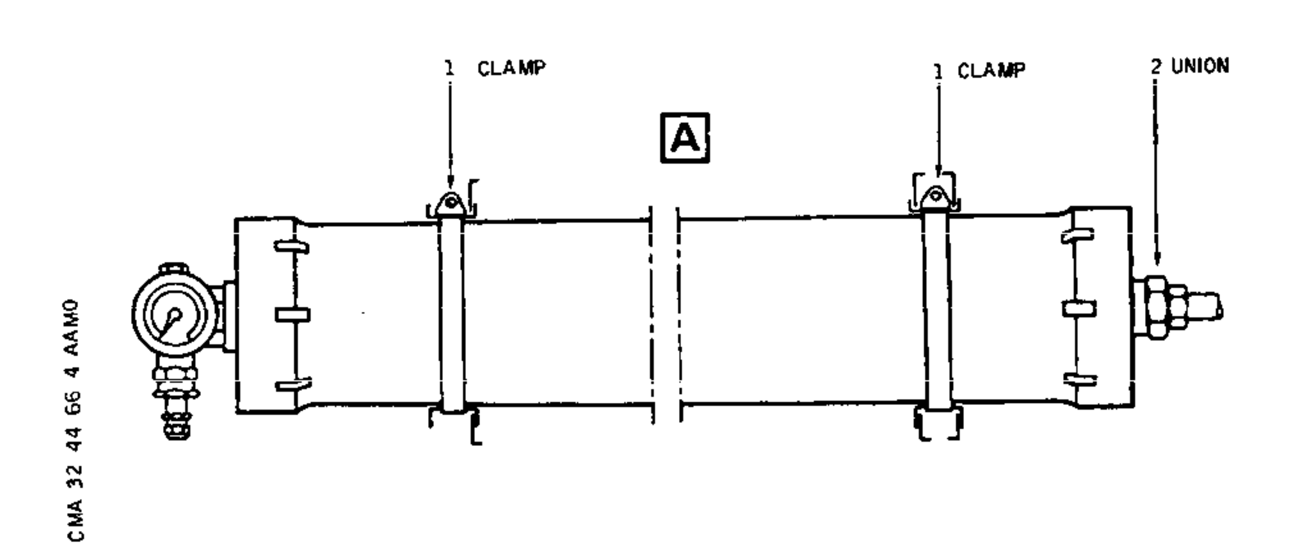
(3) Engage clamps (1) and tighten.

(4) Connect hydraulic line to union (2) and tighten nut.

(5) Charge Emergency accumulator with nitrogen (Ref. 32-44-66, Servicing).

(6) Top up the system (Ref. 12-12-29).





Emergency Accumulator
Figure 401

F. Tests

R (1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) Check the replacement component for leakage.

(3) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R (4) On Emergency accumulator, check that pressure gauge
R reads 275 bars (3987 psi).

G. Close-Up

(1) Remove spillage fluid container.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(3) Close access doors.

(4) Shut down and disconnect hydraulic ground power unit.

(5) Remove access platform.

EMERGENCY BRAKE SYSTEM ACCUMULATOR - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Check Emergency brake system accumulator nitrogen chamber charging pressure.

2. Emergency Brake System Accumulator

A. Equipment and Materials

DESCRIPTION	PART NO.
Wheel Chocks	
Access Platform 3.141 m (10ft 3in)	
Thermometer	

B. Check

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(5) Depressurize Emergency brake system through correspon-

ding valve (3661).

(6) With pressure nul in Emergency brake system, note pressure indicated on Emergency accumulator pressure gauge.

(7) Note ambient temperature.

(8) Check that pressure gauge reading versus ambient temperature conforms with pressure on indicator plate above Emergency accumulator.

(9) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(a) On Emergency accumulator pressure gauge, check that pressure reading corresponds with pressure supplied by Yellow hydraulic system.

(10) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

C. Close-Up

(1) Close access doors.

(2) Remove access platform.

SAFETY VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A base plate is installed under each main landing gear bogie beam at the shock absorber/bogie beam pivot point. Two safety valves are mounted on each base plate.
Each safety valve is installed in the Emergency braking hydraulic line supplying the two inner or outer brake units on the same main landing gear. In the event of leakage downstream of the safety valve, the safety valve isolates the brake unit concerned (the other brake unit is still supplied with pressure).
Sealing between the base plate and the safety valves is achieved by spools.
The safety valves being identical, a typical removal/installation is described in this topic.

2. Safety Valve 4202 - 4226 (4203 - 4227)

A. Equipment and Materials

DESCRIPTION	PART NO.
Wheel Chocks	
Container	
Lockwire - Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	
Blanking Plugs	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(5) On centre console, make certain that brake selector lever is in NORM position.

(6) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.
IF A HYDRAULIC GROUND POWER UNIT IS USED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(7) Depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing). Depressurize Emergency braking system by means of corresponding valve 3661.

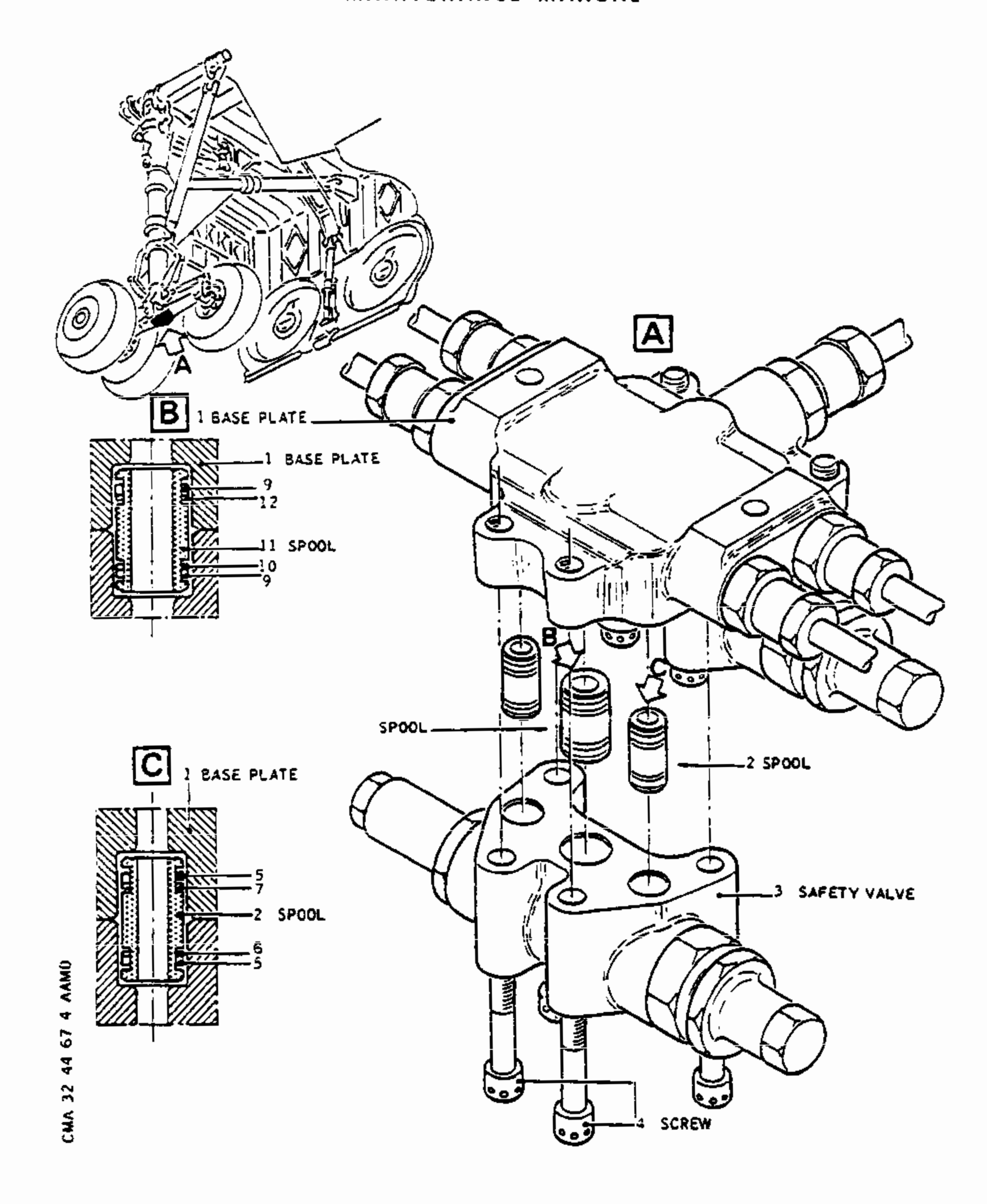
(8) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(9) Remove corresponding side cover.

C. Remove

(1) Cut and remove lockwire and remove screws (4).

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Safety Valve
Figure 401

R

(2) Remove safety valve (3).

(3) Remove spools (2) and (11).

(4) Install blanking plug in each of the base plate ports.

D. Preparation of Replacement Component

NOTE: The safety valve is filled with product No.011 (Ref. 20-30-00).

(1) Discard seals and back-up rings on spools (2) and (11).

(2) Check that spools (2) and (11) are in correct condition. Replace if necessary.

R (3) On spools (2), install new seals (5) and new back-up rings (6) and (7).

R (4) On spools (11), install new seals (9) and new back-up rings (10) and (12).

D
D

E. Install

(1) Remove blanking plugs from ports in base plate (1).

(2) Install spools complete in corresponding ports in base plate.

NOTE: The end of the spool marked with a circular groove is installed facing base plate.

(3) Remove blanking plugs from replacement safety valve.

(4) Position safety valve (3) and secure with screw (4). Safety screws (4) with lockwire (Ref. 20-21-13).

(5) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain in particular that no trace of hydraulic fluid remains.

(6) Remove safety clip and tag and reset circuit breaker (M 626).

(7) Pressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

F. Test.

Bleed brake units corresponding to replaced safety valve (Ref. 32-44-00, Servicing). During bleeding, check safety valve for external leakage.
On Flight Engeneer's panel, on Emergency brake accumulator pressure gauge, check that accumulator is correctly charged.

G. Close-Up.

(1) Replenish Yellow hydraulic tank (Ref. 12-12-29).

(2) Remove warning notices.

(3) Install side cover safety screws with lockwire (Ref. 20-21-13).

EMERGENCY BRAKE DUAL PRESSURE GAUGE - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The Emergency brake dual pressure gauge is located on the centre instrument panel. It indicates the Emergency brake system pressure delivered to the LH and RH main gear wheel brake units. A cross-hatched flag appears in lower RH corner when electrical supply to pressure gauge is out off.

2. Emergency Brake Dual Pressure Gauge

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Connect electrical ground power unit.

(5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EMER BRAKE PRESS IND	2-213	G112	E15
BRAKE EMER/ACCUM PRESS IND	25-216	G118	C 6

C. Remove

(1) Remove screws (1)

(2) Remove clamping plate

(3) Slowly and carefully withdraw dual pressure gauge until electrical plug can be seen.

(4) Disconnect electrical plug.

(5) Cap electrical plug and dual pressure gauge receptacle.

D. Preparation of Replacement Component

(1) Remove protective cap from dual pressure gauge receptacle.

E. Install

(1) Remove protective cap from electrical plug.

(2) Offer up dual pressure gauge and connect electrical plug.

(3) Install dual pressure gauge.

(4) Install clamping plate.

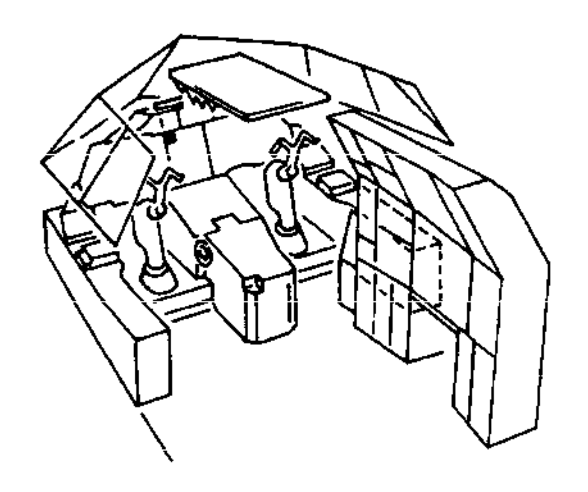
(5) Install screws (1).

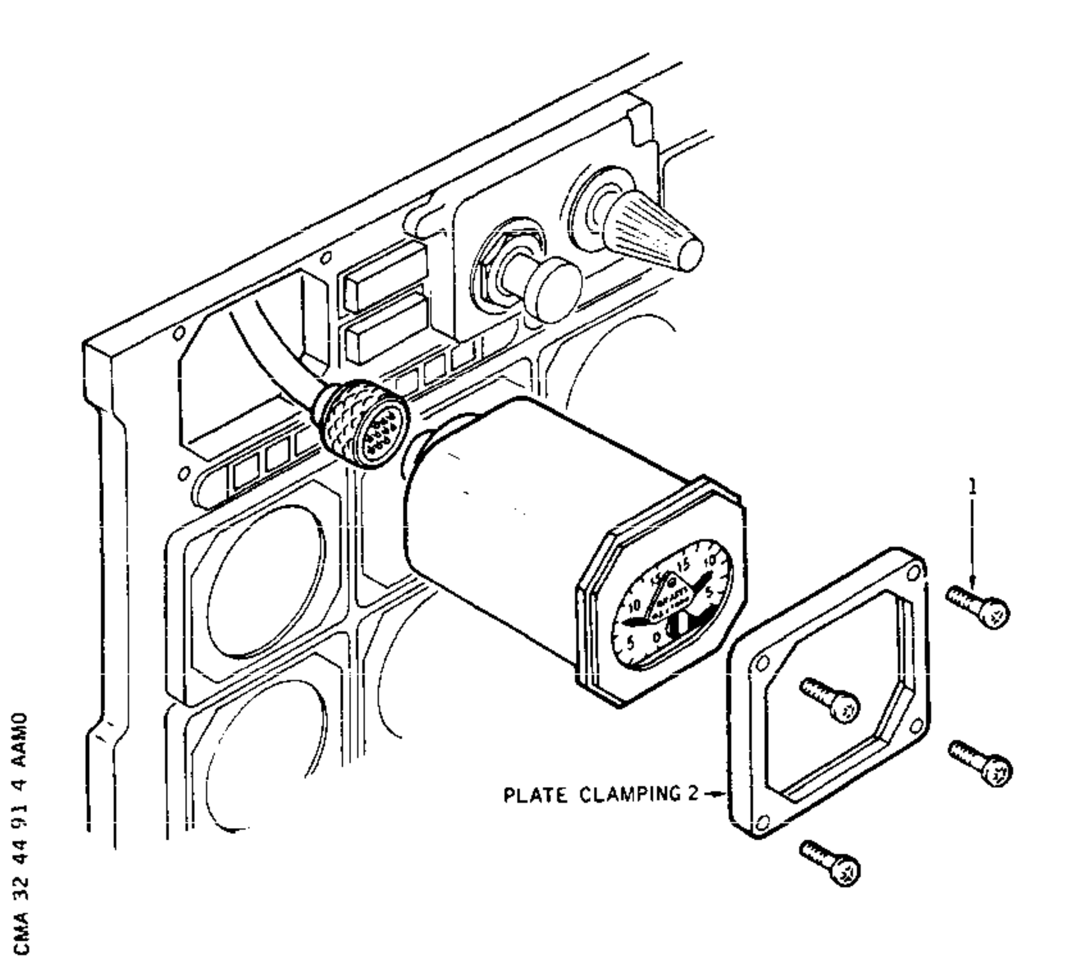
F. Tests

(1) Remove safety clips and tags and reset circuit breakers

(2) Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) Pressurize yellow hydraulic system (Ref. 29-21-00, Servicing).





Emergency Brake Dual Pressure Gauge
Figure 401

(4) Depress pilot pedals to second load threshold.

(5) On centre instrument panel, on dual pressure gauge :

(a) Make certain that cross-hatched flag is no longer visible.

(b) Make certain that the LH and RH pointers indicate 1160 $\pm$ 72 psi (80 $\pm$ 5 bars).

(6) Release pedals.

(7) On centre instrument panel, on dual pressure gauge :

(a) Make certain that the LH and RH pointers indicate zero pressure.

(8) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

EMERGENCY BRAKE ACCUMULATOR PRESSURE GAUGE - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SURFACES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The Emergency brake accumulator pressure gauge is located on the Flight Engineer's panel. A cross-hatched flag appears in lower RH corner when electrical supply to pressure gauge is cut off.

2. Emergency Brake Accumulator Pressure Gauge

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Connect electrical ground power unit.

(5) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
BRAKE ACCUM PRESS IND	13-216	G 111	A12
BRAKE EMER/ACCUM PRESS IND	25-216	G 118	C 6

C. Remove

CAUTION : DO NOT LOOSEN SCREWS (2).

(1) Loosen screws (1) to allow withdrawal of pressure gauge.

(2) Slowly and carefully withdraw pressure gauge until electrical plug can be seen.

(3) Disconnect electrical plug.

(4) Cap electrical plug and pressure gauge receptacle.

D. Preparation of Replacement Component

(1) Remove protective cap from pressure gauge receptacle.

E. Install

(1) Remove protective cap from electrical plug.

(2) Offer up pressure gauge and connect electrical plug.

(3) Install pressure gauge.

(4) Tighten the two screws (1).

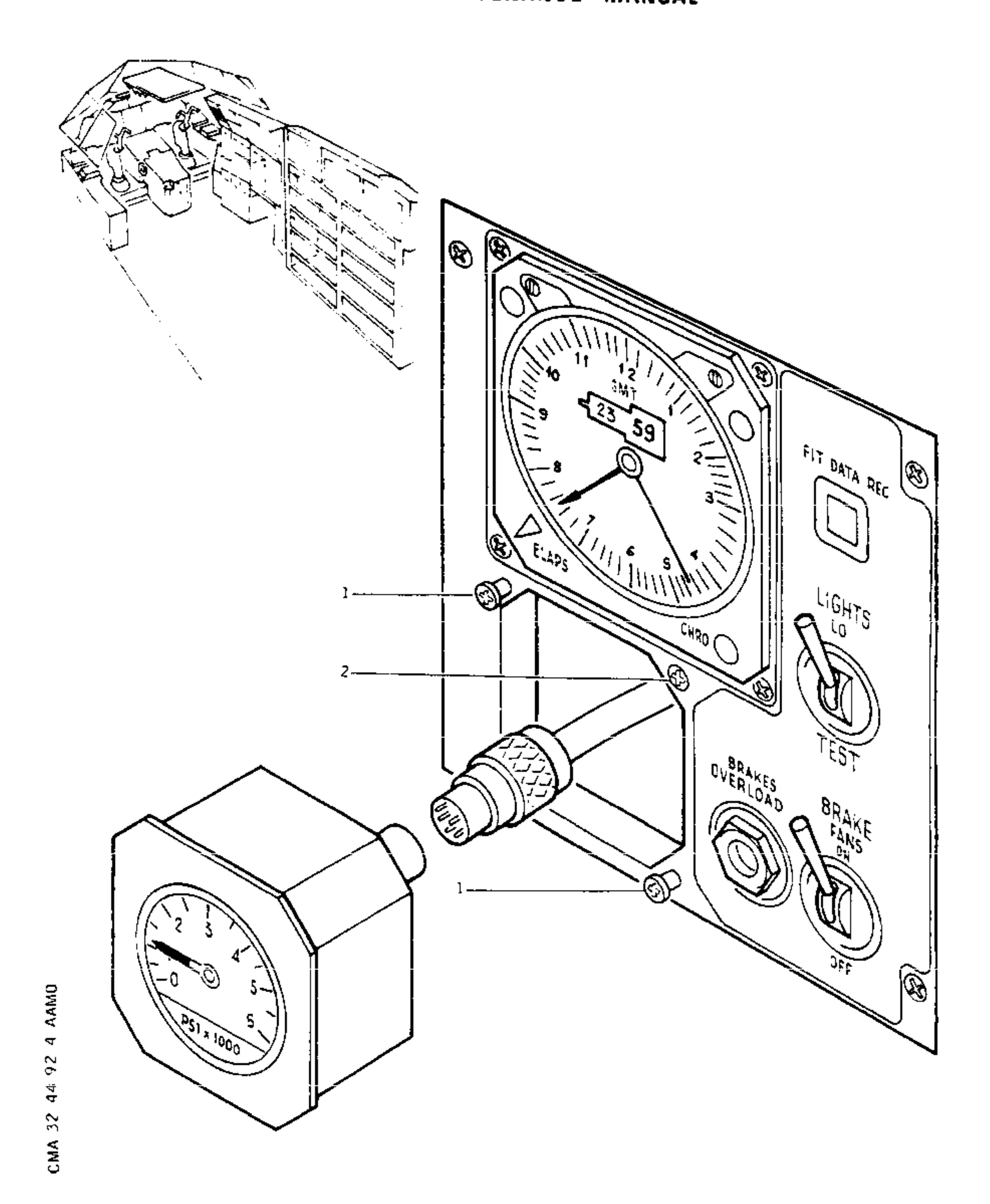
Torque screws (1) to between 0.056 and 0.090 m.daN (5 and 8 lbf.in.).

F. Tests

(1) Remove safety clips and tags and reset circuit breakers.

(2) Energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(3) Pressurize Yellow hydraulic system



Emergency Brake Accumulator Pressure Gauge
Figure 401

(Ref. 29-21-00, Servicing).

(4) On Flight Engineer's panel, on pressure gauge :

(a) Make certain that cross-hatched flag is no longer visible.

(b) Make certain that pointer indicates 4000 psi (275 bars).

(5) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

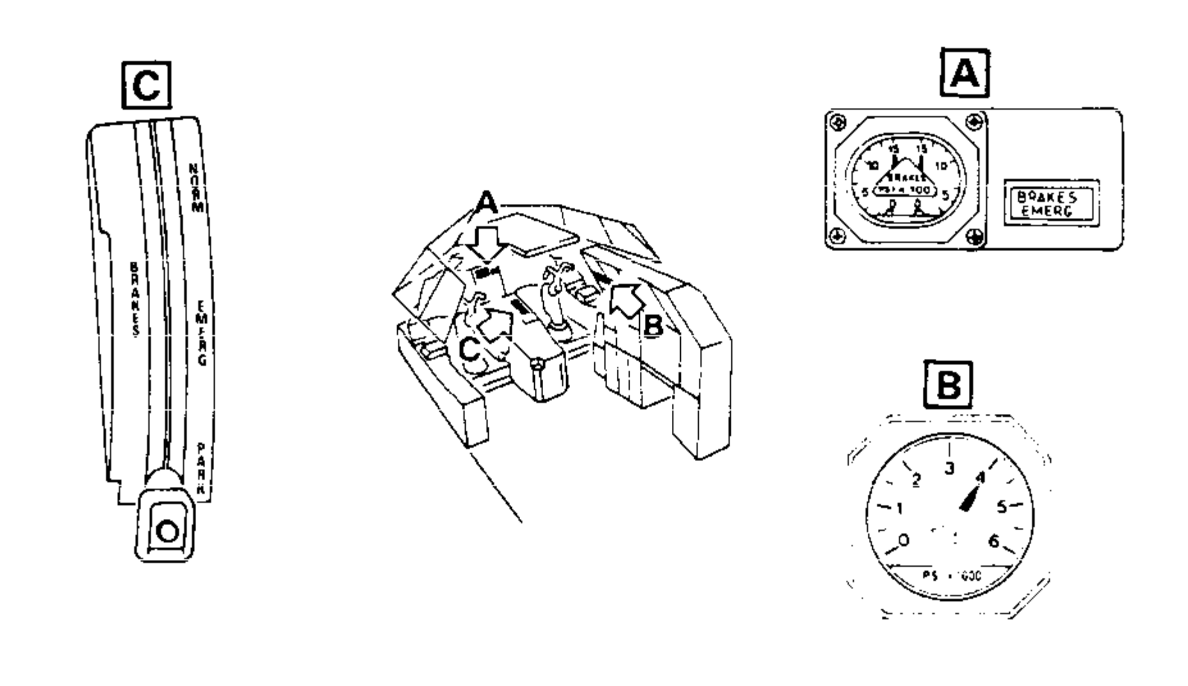
G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

1. General

Parking/Ultimate Emergency braking is controlled by the brake selector lever on the centre console. It is supplied by the Yellow hydraulic system with the back-up of an accumulator. Braking is hydraulically operated symmetrically, with a maxi-
R mum pressure applied to the eight main landing gear wheel
R brake units.

2. Controls and Indicating (Ref. Fig. 001)



Controls and Indicating Parking/Emergency Braking
R Figure 001

A. Parking/Ultimate Emergency braking is achieved by moving the selector lever to the PARK position.
The lever cannot be directly moved from NORM to PARK position.
This manoeuvre is accomplished in two stages.

(1) Changeover from NORM to EMERG position is achieved

by direclty moving the brake selector lever.

(2) Changeover from EMERG to PARK position is achieved
R by pressing the brake selector lever pushbutton.

B. The brake selector lever can only be moved back to NORM
R position after pressing the pushbutton, but EMERG position
R is overriden.

R NOTE : With brake selector lever in PARK position, the
R EMERG position can be correctly selected only
R by first passing the lever directly from PARK
R to NORM and then from NORM to EMERG.

C. Indicating is provided by :

(1) A dual pressure gauge installed on the centre instrument panel. This indicator displays LH and RH main gear Parking/Ultimate Emergency brake supply pressure.

(2) A single pressure gauge installed on Flight Engineer's panel displays Emergency brake accumulator pressure.

(3) A BRAKES EMERG warning light installed on the centre instrument panel. This warning light remains illuminated when the brake selector lever is placed in PARK position.

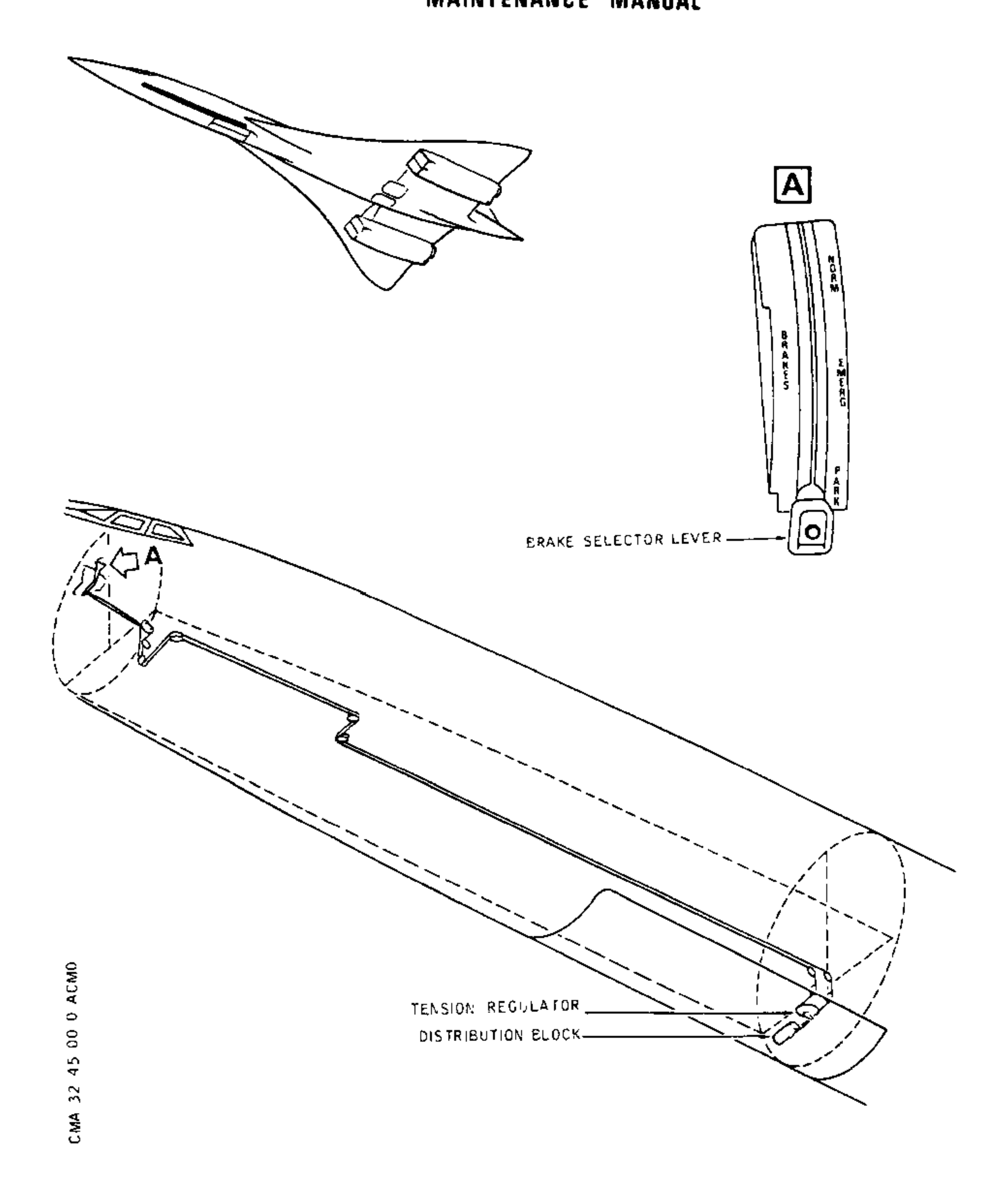
3. Description (Ref. Fig.002 and 003)

The Yellow hydraulic system comprises :

A. An Emergency accumulator (3654) pressurized through the Yellow hydraulic system. It can be pressurized, on the ground only, by an electro-pump unit controlled from the Flight Engineer's panel. It provides the necessary pressure for Parking/Ultimate Emergency Braking.

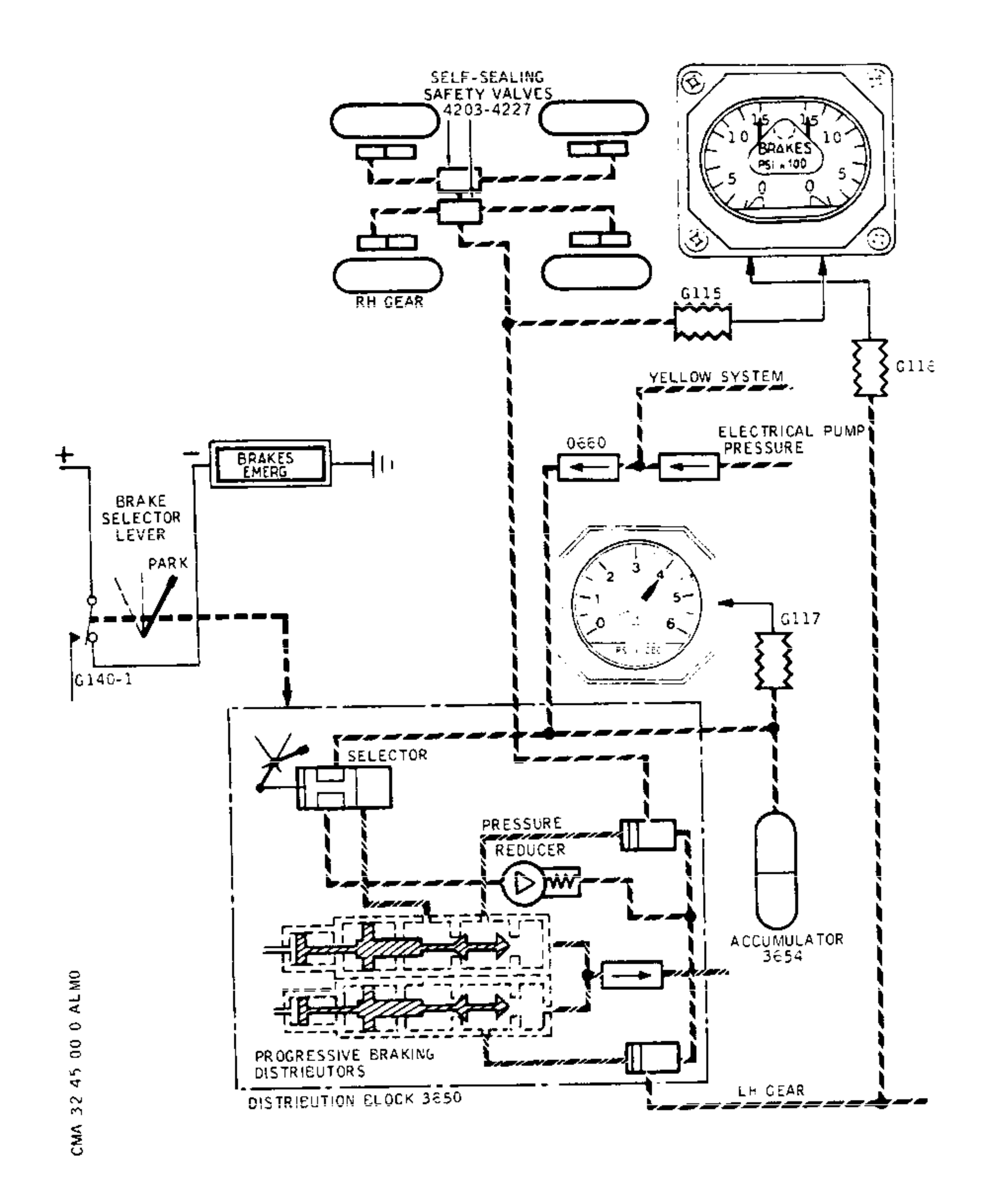
R B. Four self-sealing safety valves 4202, 4226 (4203, 4227).
R Each safety valve is installed in the line supplying the
R two inner or outer brake units on the same landing gear.
R In the event of leakage downstream of the safety valve, the
R safety valve isolates the brake unit concerned (the other
R brake unit is still supplied with pressure).

C. A brake distribution block (3650) installed in the nose landing gear bay.
A braking selector valve is incorporated in distribution block corresponding to NORM, EMERG and PARK positions of the brake selector lever located on the centre console.



Distribution Block Mechanical Control
Figure 002

R



Parking/Ultimate Emergency Braking System
Figure 003

R

R The selector valve is mechanically controlled through a
R system of rods and cables with tension regulator.
In the Parking position, the selector valve ports pressure through a pressure reducing valve (non-leakage type) incorporated in the distribution block.

4. Block - Brake Distribution (3650) (Ref. Fig. 004)

A. General

The brake distribution block is only functional when Emergency or Parking braking is selected.

B. Description

The brake distribution block is comprised of :

- Two identical progressive braking distributors acting on LH or RH brakes.
- A pressure reducing valve (only functional when Parking braking is selected).
- A mechanically controlled selector valve.
- Two shuttle valves.

(1) Brake Control Valve

The brake control valves are supplied with pressure by the master cylinders.
Each brake control valve is comprised of a balance piston assembly, a spool and a spring loaded sleeve.
They deliver pressure to the brakes via the shuttle valves.
A bleed connection is fitted to the end of each control valve.

(2) Pressure Reducing Valve

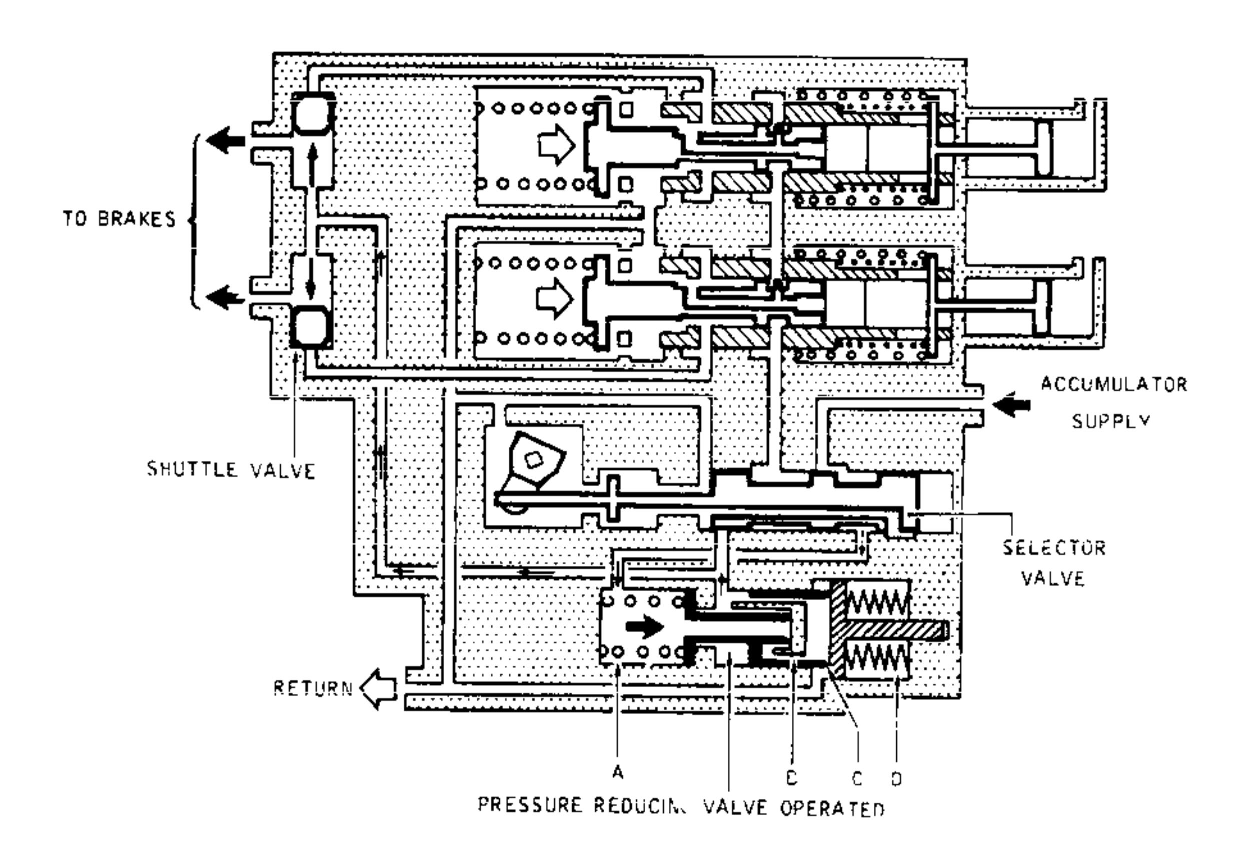
The pressure reducing valve incorporates an inlet valve and exhaust valve.
The fluid passages of the inlet valve are linked to the shuttle valves and the fluid passages of the exhaust valve are linked to the return system.

(3) Selector Valve

The selector valve incorporates a spool which is mechanically operated from the flight compartment through the brake selector lever.
This spool supplies or cuts off hydraulic fluid to the brake control valves.

C. Operation

During Parking operation the control valves are not supplied with pressure due to the position of the selector valve spool.



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Brake Distribution Block
Figure 004

The pressure from the accumulator (3654) is supplied to the inlet side (B) of the pressure reducing valve ; the pressure passes through this valve and is ported towards the brakes. Simultaneously the exhaust valve (C) is lifted causing the spring (A) loaded inlet valve to close. The inlet valve comes to rest against its seat and locks the pressure in the brake system downstream of the pressure reducing valve.
R If the pressure supplied to the brakes exceeds 215 bars
R (3118 psi) the exhaust valve opens thus reducing the pres-
R sure to 215 bars (3118 psi) and creating a balanced condition. The excess fluid is ported to the return tank.

The exhaust valve thus compensates for any rise in pressure. When NORM or EMERG is selected the inlet valve fluid passages are linked to the return tank and the spring washers (D) return the assembly to its initial position.

R 5. Tension Regulator (Ref. Fig. 005)

R A. General

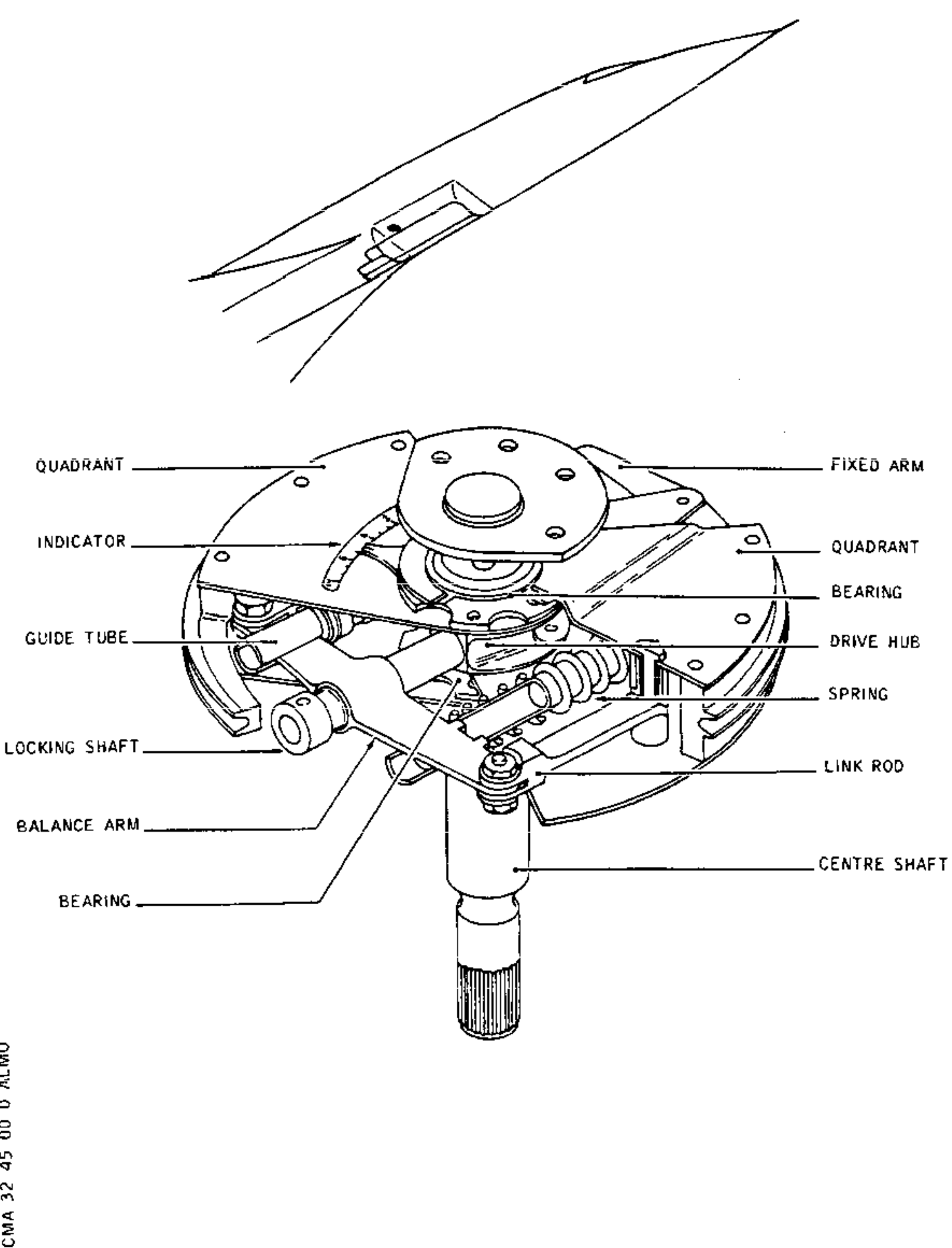
R The tension regulator is controlled from the brake selector
R lever on the centre console via control cables.
R The tension regulator in turn controls the brake distribu-
R tion block selector valve by means of the centre shaft.
R The tension regulator compensates for changes in cable ten-
R sion caused by deflections of the aircraft structures and
R changes in ambient temperature.

R B. Description

R The tension regulator consists of two quadrants each equip-
R ped with a bearing, pivoted on a common centre shaft and a
R compensating mechanism.
R The compensating mechanism is composed of a drive hub, two
R springs mounted on the guide tubes and a balance arm assem-
R bly. The two springs on the guide tubes are retained under
R tension between the balance arm and the fixed arm.
R Two rod assemblies, one at either end of the balance arm
R serve to link the compensating mechanism and the quadrants.
R A pointer rivetted on the side plate of one quadrant regis-
R ters against a scale rivetted to the side plate of the op-
R posing quadrant the amount of compensation being given by
R the regulator.

R C. Operation

R As the materials used in the manufacture of cables and air-
R craft structures have different coefficients of expansion,
R variations in temperature will result in changes in cable
R tension.
R When the cables tighten equally the quadrants rotate equal-
R ly about the centre shaft and a balanced load will be
R applied to the balance arm through the two link rods, for-
R cing the balance arm along the locking shaft and compres-
R sing the two springs. The cables are lengthened and the
R tension maintained.
R When the tension in the cables decreases the springs force
R the balance arm back along the locking shaft. This movement
R is transmitted through the link rods to rotate the qua-
R drants in the opposite direction to take in cable and main-
R tain the tension.



R

Tension Regulator
Figure 005

R 6. Operation (Ref. Fig. 001, 002 and 003)

A. Hydraulic pressure from the Yellow system or Emergency braking accumulator (3654) is available at distribution block (3650) selector valve.

B. When the brake selector lever is placed in EMERG position, Emergency/Parking brake unit switch assemblies G140-1 and G140-2 are immediately actuated.
Switch assembly G140-1 causes BRAKES EMERG light located on centre instrument panel to illuminate.
Switch G140-2 cuts off power to Normal brake supply selector valve G137. Normal braking system hydraulic supply is automatically cut off.

C. When the brake selector lever is placed in PARK position the BRAKES EMERG light remains illuminated.
Distribution block (3650) selector valve cuts off the supply to the progressive braking distributors and delivers pressure to the eight main gear wheel brakes through the pressure reducing valve. The pressure reducing valve limits pressure
R to 215 + 15, -10 bars (3118 + 217, -145 psi).

D. Pressure is delivered to the brake units after displacing the two shuttle valves in the brake distribution block.
On centre instrument panel, on dual pressure gauge, the two pointers are in maximum stop position.

PARKING/ULTIMATE EMERGENCY BRAKING - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN
R 24-00-00, SERVICING.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, SERVICING.

1. General

The following information is intended to enable faults found in the Parking/Ultimate Emergency braking system to be quickly rectified.
R The defect can be isolated with the aid of trouble shooting
R procedures and traced through OK and NOT OK paths to the appro-
R priate charts or other specified rectification action as may
R be necessary. If a defect occurs, perform the appropriate rec-
R tification action, then repeat the operation at which the defect
R was encountered to ensure the operation is OK.
R Bracketed numbers in the procedures and charts indicate items
R on the Component Identification Table (Ref. Table 101). The
R table provides information, including component location
R required for rectification.

2. Prepare

A. On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

B. On centre console, make certain that landing gear Emergency control lever is in NEUTRAL position.

R C. On centre console, make certain that brake selector lever is in NORM position.

D. Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EMER BRAKE PRESS IND	2-213	G 112	E15
BRAKE ACCUM PRESS IND	13-216	G 111	A12

E. Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

R F. Pressurize Yellow hydraulic system (Ref. 29-21-00,

R Servicing).

3. Trouble Shooting

```
   **************************************
   *On centre console, it is possible to*
R  *place brake selector lever in PARK  *
   *position.                           *
   **************************************
           ||           |            ------------------------------
           ||           |           |Not possible to place        |
R          ||           |           |brake selector lever in      |
           ||           |           |PARK position.               |
           OK           NOT OK------|                             |
           ||                       |Adjust cable tension or      |
R          ||                       |replace faulty cable [1].    |
           ||                        ------------------------------
   **************************************
   *On centre instrument panel, on dual *
   *pressure gauge, pressures are       *
   *correct.                            *
   **************************************
           ||           |            ------------------------------
           ||           |           |On centre instrument panel   |
           ||           |           |on dual pressure gauge,      |
           ||           |           |the pressures are not        |
           ||           |           |correct.                     |
           OK           NOT OK------|                             |
           ||                       |Replace brake distribution   |
R          ||                       |block [2].                   |
           ||                        ------------------------------
   *************************************************************
R  * Parking/Ultimate Emergency braking system is serviceable. *
R  * Restore Parking/Ultimate Emergency braking system to      *
R  * normal operating condition.                               *
R  * On centre console, place brake selector lever in NORM     *
R  * position.                                                 *
R  * Shut down and depressurize Yellow hydraulic system        *
R  * (Ref. 29-21-00, Servicing).                               *
R  * De-energize the aircraft electrical network and disconnect *
R  * electrical ground power unit (Ref. 24-41-00, Servicing).  *
R  *************************************************************
```

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP IDENT.	POSITION	MANUAL REF MAINT. TOPIC	MANUAL REF WIRING DIAGRAM
R [1] Cables	212 to 222	126		Flight and passenger compartments	32-44-00 A/T	
R [2] Brake Distribution Block	712	128	3650	Nose gear bay	32-44-41 R/I	

Component Identification
Table 101

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

CHECK THAT LANDING GEAR GROUND SAFETY DEVICES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. General

Check, with aircraft on the ground, operation of Parking/Ultimate Emergency braking system.

2. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Spring Scale 20 daN (46 lbf)	
Electrical Ground Power Unit	

R

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector

lever is in NORM position.

R (4) Open door 151DB under fuselage and check that Emergency
R brake system accumulator pressure and Yellow hydraulic
R system pressure are correct.

R (5) Connect electrical ground power unit and energize the
R aircraft electrical network (Ref. 24-41-00, Servicing).

(6) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
EMER BRAKE PRESS IND	2-213	G 112	E15
PLTS LT TEST SUP	15-215	L1001	E14
BRAKE ACCUM PRESS IND	13-216	G 111	A12
WHEEL BRAKE "B" SYS CONT	15-216	G 132	B18
BRAKE EMER/ACCUM PRESS IND	25-216	G 118	C 6
BRAKE EMER/ACCUM/WATER PIPE HTR CONT		G 119	B 7

(7) Connect hydraulic ground power unit to Yellow system.

C. Test of BRAKE EMERG warning light

(1) On centre console, place and hold LIGHTS TEST switch in TEST position.

R (a) On centre instrument panel, BRAKES FAIL and
R BRAKES EMERG warning lights come on.

NOTE : Other lights might come on.

(2) On centre console, release LIGHTS TEST switch.

(a) The switch returns to HI position.

R (b) BRAKES FAIL and BRAKES EMERG warning lights go off

R D. Test of Parking/Ultimate Emergency Braking System

(1) On centre console, make certain that brake selector lever is in NORM position

(2) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).
R Regulated pressure is between 268 and 279 bars (3890
R and 4050 psi).

(a) On Flight Engineer's panel, check on pressure gau-
R ge that the pressure is 275 bars (3988 psi).

(3) On centre console, place brake selector lever in PARK position.

(a) On centre instrument panel, BRAKES EMERG warning light comes on.

(b) On centre instrument panel, check on BRAKES dual pressure gauge that pressure is delivered to LH and RH brakes.

NOTE : The dual pressure gauge pointers indicate maximum stop position.

(4) On centre console, place brake selector lever in NORM position.

(a) On centre instrument panel, BRAKES EMERG warning light goes off.

(b) On centre instrument panel, check on BRAKES dual pressure gauge that the pressure delivered to LH and RH brakes is nul.

R (5) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

E. Parking or Ultimate Emergency Brake System Leakage Test

(1) Pressurize yellow hydraulic system (Ref. 29-21-00, Servicing).
R Regulated pressure is between 268 and 279 bars (3890
R and 4050 psi).

(a) On Flight Engineer's panel, check on pressure gau-
R ge that the pressure is 275 bars (3987 psi).

R (2) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(3) On center console, place brake selector lever in PARK

position.

(a) Note the variations in pressure in Emergency brake system accumulator for 12 hours (the pressure is read on the pressure gauge on Flight Engineer's panel). After 6 hours pressure should be greater
R than 230 bars (3336 psi).
After 12 hours pressure should be greater than
R 200 bars (2900 psi).

(4) On centre console, place brake selector lever in NORM position.

(5) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

F. Brake Selector Lever Operating Effort

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) Install spring scale on lever.

(3) Operate lever by means of spring scale from NORM to EMERG then EMERG to PARK.

R (4) Note operating effort which should be below 10 daN
R (22.48 lbf).

(5) Operate lever by means of spring scale from PARK to NORM.

(6) Note operating effort which should be less than
R 5 daN (11.24 lbf).

(7) Remove spring scale.

(8) Shut down and depressurize Yellow hydraulic system. (Ref. 29-21-00, Servicing).

G. Close-Up

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(2) On centre console, make certain that brake selector lever is in NORM position.

(3) Disconnect hydraulic ground power unit.

(4) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(5) Close access doors.

1. Control Cables

A. General

The Parking/Ultimate Emergency brake control system includes 7 x 19 (7 strands of 19 wires) preformed galvanized carbon steel cables.

DIAMETER	TYPE	MATERIAL
1/8" (3.2 mm)	7 x 19	Carbon steel

B. Equipment and Materials

DESCRIPTION	PART NO.
R Special Materials (Ref. 20-30-00, No.124)	
R Cleaning (Ref. 20-30-00, No.469)	
Cleaning (Ref. 20-30-00, No.477)	

C. Visual Inspection

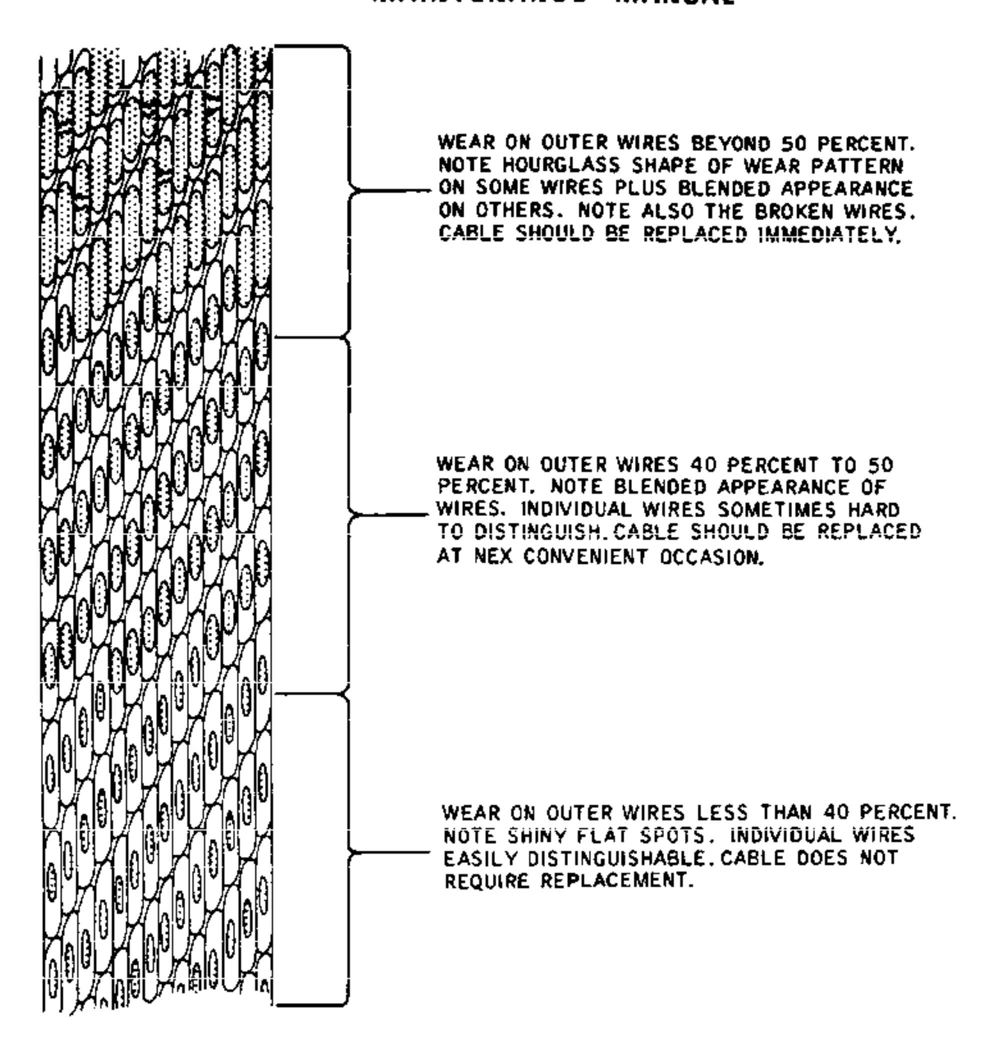
(1) Cable Wear (Ref. Fig. 601)

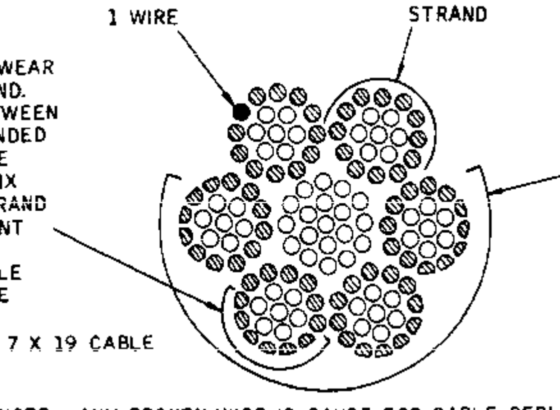
R Check that cables are free from obstruction over the
R full range of travel.
R Check cables for wear and corrosion.

R NOTE : Cables must be inspected throughout their
R length and particularly over the full range
R of travel at points where wear may be expec-
R ted. Wear generally takes place where cables
R pass through fairleads and pressure seals,
R run around pulleys or where changes in direc-
R tion of the run occur.

R Wear limits

R Typical cable wear may occur on one side only or on
R full circumference and may extend along the cable for
R a distance equal to normal cable movement.





NOTE : ANY BROKEN WIRE IS CAUSE FOR CABLE REPLACEMENT

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R

Cable Wear
Figure 601

- Wear on cable strand outer wires less than 40 % of wire diameter.
  Note shiny flat sports.
  Individual wires easily distinguishable.
- Wear on outer wires between 40 % and 50 %. Note blended appearance of wires. Individual wires hard to distinguish.
- Wear on outer wires beyond 50 %.
  Note hourglass shape of wear pattern on some wires and blended appearance on others.
  Check for broken wires.

A cable with a broken wire must be replaced.

(2) Corrosion

Check for corrosion especially on cable sections in contact with pulleys, fairleads and pressure seals.

(a) If any surface corrosion is found, carry out a more detailed inspection requiring cable slackening for inspection of inner strands.

(b) Discard the cable if inner strand corrosion is found.

(c) In case of superficial corrosion :

- Clean the cable using a brush or a lint-free cloth soaked with product No.477 or No.478.
- Allow to dry.
- Apply a very light coat of anti-corrosion product No.124 on cable.
- Remove surplus grease on cables ; surplus grease can collect abrasive particles which could deteriorate the cables

2. Pulleys and Cable Tensioners

A. General

The Parking/Ultimate Emergency control system incorporates fibre/resin pulleys mounted on bearings and protected by stainless steel deflectors.

B. Check Pulleys

Check pulleys and attaching hardware for correct condition ;

- Side play

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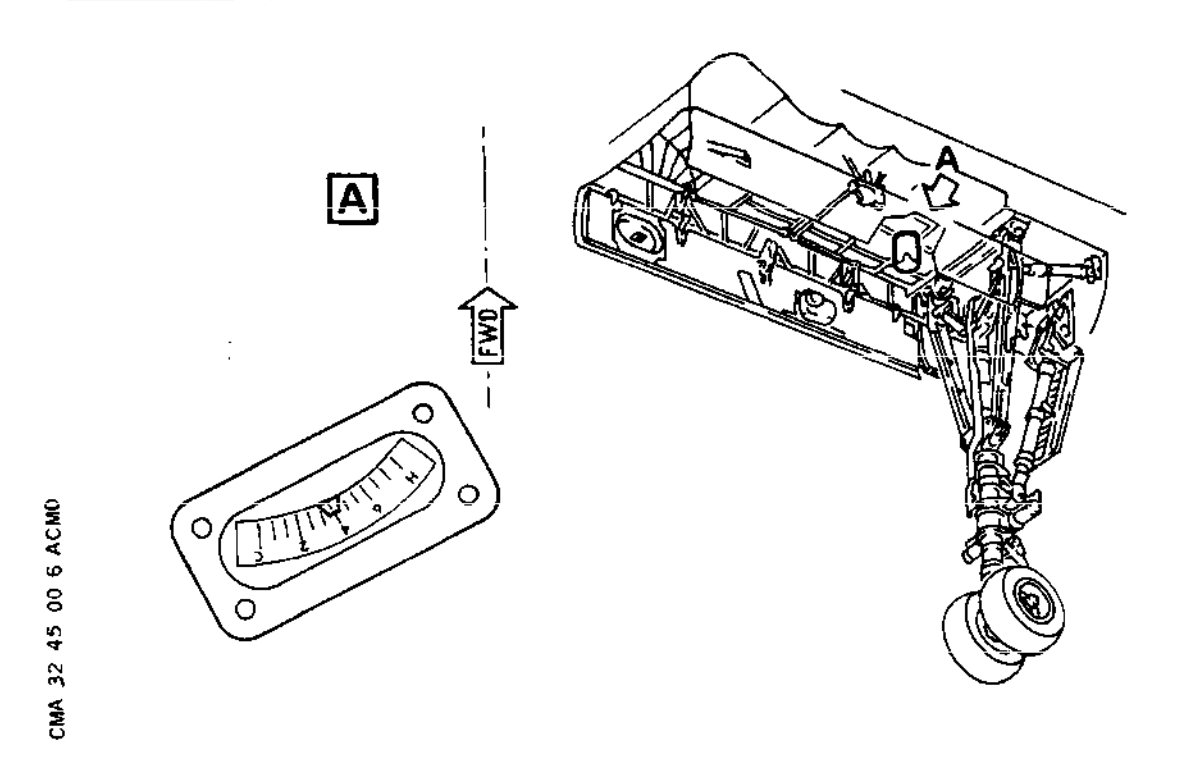
R - Alignment of fixing brackets or mountings
R - Correct safetying
R - Distortion of cable guides or friction between cables and
R cable guides
R - Traces of corrosion

R Check pulleys for freedom of rotation (absence of hard
R spots).

R C. Check Cable Tensioners

R Check that cable tensioners are correctly safetied (lock-
R pins in place) and that they are not obstructed.

3. Tension Regulator (Ref. Fig. 602)



Tension Regulator
Figure 602

A. In passenger compartment, remove floor panel 222VF.

B. On tension regulator make certain that pointer is aligned with centre graduation (No.4) for an ambient temperature of 15°C.

NOTE : With other ambient temperatures, a correction of 0.4 divisions per 15°C variation must be applied with respect to the reference temperature of 15°C. Correction must be made towards the H (hot) mark with temperatures of more than 15°C and towards the C (cold) mark with temperature below 15°C.

Adjustment is accomplished by rotating the turnbuckles in the appropriate direction.

C. Install floor panel 222VF.

EMERGENCY/PARKING BRAKE UNIT SWITCH ASSY - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The Emergency/Parking brake unit switch assembly serves to :

- Cut off electrical supply to Normal braking supply selector valve when brake selector lever is in EMERG or PARK position
- Illuminate BRAKES EMERG warning light when brake selector lever is in EMERG or PARK position

The switch assembly is located on the center console, RH side, under the brake selector lever.

2. Switch Assembly

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.6 (0.024 in.) (Corrosion Resistant Steel)	

B. Prepare

(1) Trip, safety and tag the following circuit breakers :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND	1-213	G 131	S16
R	WHEEL BRAKE "B" SYS CONT	3-213	G 132	D 9

(2) Remove access panel 212JS.

(3) Disconnect rod (5) from lever (1).

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- Remove cotter pin and remove nut (2), washer (3) and pin (4).

C. Remove (Ref. Fig. 401)

(1) Remove screw (9) from clamp (8).

(2) Disconnect switch assembly wiring at terminal box UM2067.
Connections 1C, 1B, 3A, 2B, 2C, 3C.

(3) Cut lockwire and remove screws (6), retain washers (7) for reinstallation and remove switch assembly with its wiring.

D. Preparation of Replacement Component

Not applicable

E. Install

(1) Position switch assembly and secure with screws (6) and washers (7).
Safety screws (6) with lockwire (Ref. 20-21-13).

(2) Position wiring in clamp (8) and connect wiring to terminal box.
Connections 1C, 1B, 3A, 2C, 3C.

(3) Install screw (9).

(4) Connect rod (5) to lever (1)

- Install pin (4), washer (3) and nut (2)
- Safety nut (2) with a cotter pin

(5) Remove safety clips and tags and reset circuit breakers

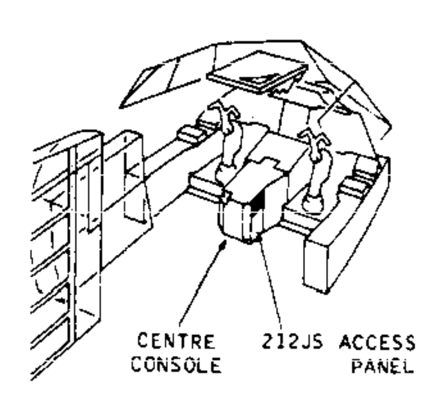
F. Tests

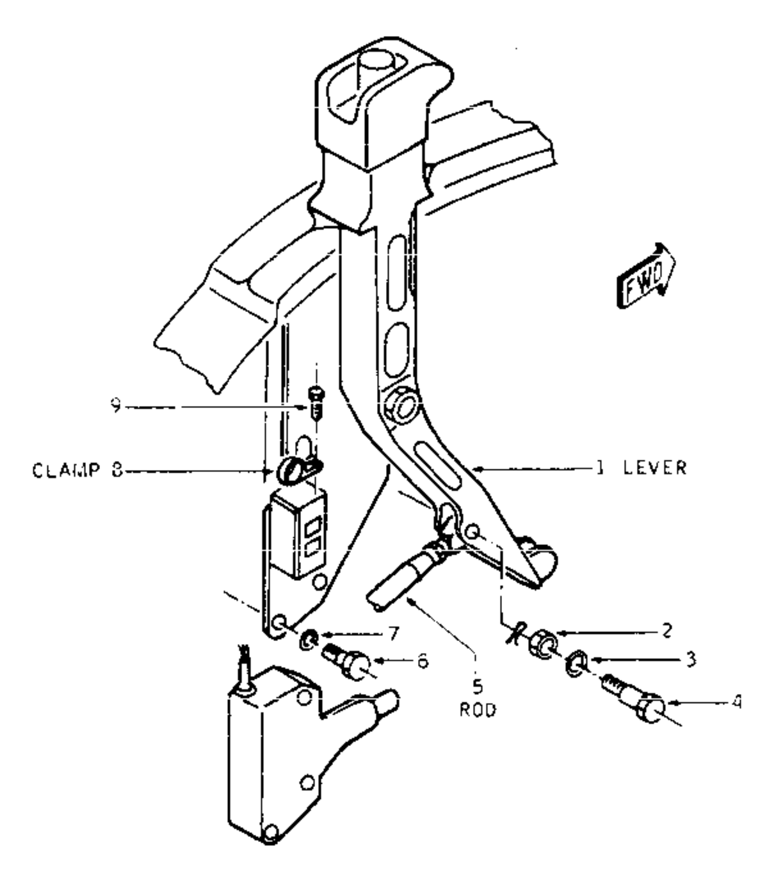
(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(2) On centre console, place brake selector lever in EMERG position and make certain that BRAKES EMERG warning light on centre instrument panel illuminates.

(3) On centre console, place brake selector lever in NORM position and make certain that BRAKES EMERG warning light is extinguished.

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Switch Assembly
Figure 401

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Install access panel 212JS.

REGULATOR ASSEMBLY - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The tension regulator is located above the nose gear bay, in front of landing gear hinge points.
It serves to maintain the tension of the Emergency and Parking braking control cables constant.

2. Tension Regulator Assembly

A. Equipment and Materials

DESCRIPTION	PART NO.
Safety Sleeve - Nose Landing Gear Doors	E925002000
Electrical Ground Power Unit	
Access platform 3.97 m (13 ft)	
Pin Assy - Console Pulley Lever Rigging	D925362000
Pin Assy - Regulator Rigging	D925362001
Locking Device For Cable Tension	
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.

**ON A/C ALL

Lockwire dia 0.80 mm (0.032 in)
Corrosion Resistant Steel

Glues and Adhesives (Ref. 20-30-00, No. 382)

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green Hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green Hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT	15-215	G 2	A 7
UC LOWER DOORS OPEN SUP	15-215	G 3	A 8
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(11) Install safety collars on door actuating jacks.

(12) Remove floor panels : 221 DF, 221HF, 221LF, 221QF, 221 UF, 222 VF.

(13) At zone R212 remove centre console housing side cover.

C. Remove (Ref. Fig. 401)

(1) Remove regulator cover (1), screw (2), washers (3).

(2) Remove cable guide (6), screw (4), washers (5).

(3) Slacken regulator control cables :
- Remove lockpin from turnbuckle and rotate the latter until cable end can be disengaged from its recess on the regulator.

(4) In nose landing gear bay. disconnect rod (12) from lever (17); remove nut (14), washer (13), bolt (11).

(5) Remove lever (17), bolt (19), recessed washer (18), then nut (21), washer (20) bolt (15) with washer (16).

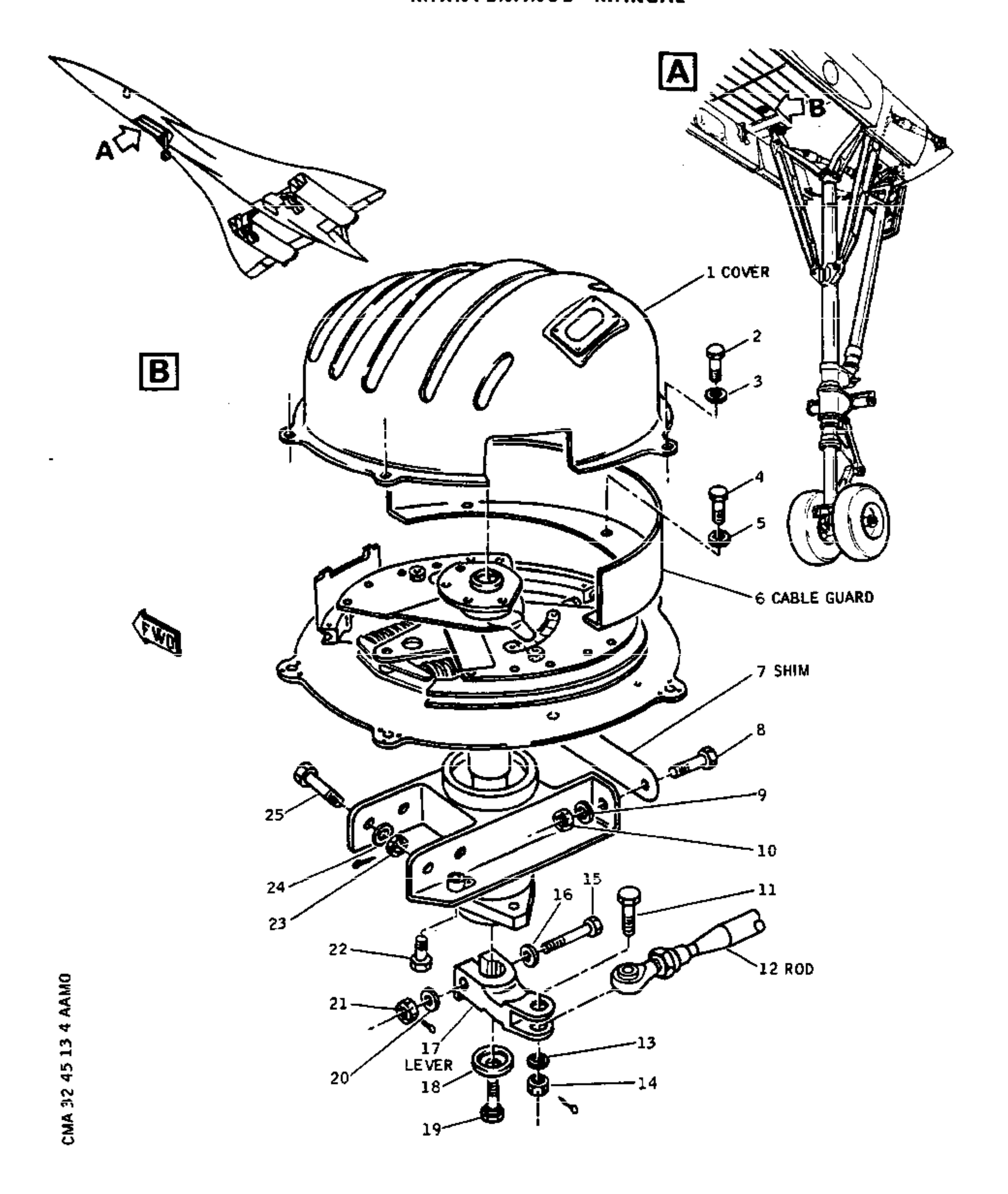
(6) Cut lockwire and remove screws (22).

(7) Separate regulator from aircraft structure ; remove nuts (23), washers (24), bolts (25) on one side, then nuts (10), washers (9), bolts (8), shims (7) on the other side.

(8) Remove regulator.

D. Preparation of Replacement Component.

(1) On removed regulator install cable guard (6), screws (4), washers (5) without safetying screws.



Tension Regulator Assembly
Figure 401

(2) On replacement regulator, remove cable guard (6), screws (4), washers (5).

E. Install

(1) Coat floor and regulator mating surfaces with jointing compound, product No. 382 (Ref. 20-22-14).

(2) Install regulator.

(3) Install screws (22) without tightening them.

(4) Install bolts (25), washers (24), nuts (23). Do not tighten nuts at this stage.

(5) Install shims (7) and bolts (8), washers (9), nuts (10) Do not tighten nuts at this stage.

(6) Tighten alternately and progressively nuts (23) and (10) and screws (22).
Torque nuts (23) and (10) to between 20 and 25 lbf.in (0.226 and 0.282 m.daN).
Torque screws (22) to between 35 and 40 lbf.in (0.395 and).452 m.daN).
Safety nuts with cotter pin.
Wirelock screws (22).

(7) In nose landing gear bay, install lever (17), recessed washer (18), screw (19), then bolt (15) with washer (16), washer (20), nut (21).
Torque screw (19) to between 25 and 30 lbf.in (0.282 and 0.339 m.daN).
Safety nut (21) with cotter pin and wirelock screw (19)

(8) Connect rod (12) to brake distribution block ; install bolt (11), washer (13), nut (14).
Safety nut (14) with cotter pin.

(9) Install cable ends in their recesses on tension regulator. Tighten cables lightly.

(10) Install cable guard (6), screw (4), washers (5).

F. Adjustment

Carry out braking Emergency control adjustment between centre console and distribution block. (Ref. 32-44-00, Adjustment/Test).

G. Close-Up.

(1) Install regulator cover (1), screw (2), washers (3), and centre console side cover.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(3) Install floor panels.

(4) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(5) Remove safety collars from door actuating jacks.

(6) Remove safety clips and tags and reset circuit breakers.

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(9) Close doors by operating handle located on nose landing gear leg. Install locking cap.

(10) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(11) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(12) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(13) Close access doors.

Printed in England

IN-FLIGHT WHEEL BRAKING - DESCRIPTION AND OPERATION

1. General

R Braking of nose gear wheels during retraction is achieved by a hydraulic control.
R This control is automatic.
R Braking of main gear wheels prior to landing gear retraction is achieved by means of the electrical braking circuit
R (Ref. 32-43-00, Description and Operation).
R
R

2. Nose-Gear In Flight Wheel Braking

Hydraulic pressure ported through the landing gear selector in the UP position unlocks the telescopic drag strut and supplies the actuating cylinders.
A third tapping supplies the brake via a valve which limits the flow of fluid to the brakes thus providing progressive braking of the wheels during gear retraction. A second safety valve cuts off the supply line in the event of rupture of the pipe interconnecting the valve and brake.

Printed in England

IN-FLIGHT WHEEL BRAKING - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, SERVICING.

1. General

This trouble shooting is intended to enable the faults found in the In-Flight wheel braking system to be quickly rectified.

The defect can be isolated with the aid of trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs perform the appropriate rectification action then repeat the operation at which the deflect was encountered to ensure the operation is OK.
Bracketed numbers in the procedures and charts indicate items on the Component Identification Table (Ref. Table 101). The table provides information, including component location required for rectification.

R
R 2. Trouble Shooting of Nose Gear In-Flight Wheel Braking System

A. Prepare

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(1) Prepare system as described in 32-46-00, Adjustment/Test.

B. Trouble Shooting

```
    *******************************
    * NOSE WHEELS ARE NOT BRAKED. *
    *******************************


    ************************************************
    * Check that pressure is delivered to nose gear*
    * brake unit (Ref. 32-46-00, Adjustment/Test). *
    ************************************************
             |              |
             |              |             -----------------------------
R            OK             NOT OK----------| Replace safety valve [2]. |
             |                            -----------------------------
             |
    ************************************************
    * Check main gear brake unit for wear.         *
    * (Ref. 32-42-21, Inspection/Check).           *
    ************************************************
             |         |
             |         |          ----------------------------------------
R            |         NOT OK----| Replace nose gear brake unit [1].      |
             |                    ----------------------------------------
             |
             |                    ----------------------------------------
             OK------------------| Bleed nose gear braking system.        |
                                 | (Ref. 32-46-00, Servicing).            |
                                  ----------------------------------------


    ------------------------------------------------------
    | Perform close-up described in 32-46-00, Servicing. |
    ------------------------------------------------------
```

Chart 101

	ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
R	[1] Nose gear brake unit		715		Nose gear	32-42-21 R/I	
R	[2] Forward wheel braking system safety valve			0577	Nose gear	32-00-00 R/I	

Component Identification
Table 101

IN-FLIGHT WHEEL BRAKING - SERVICING

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Nose gear brake system bleeding after replacement of brake unit.

WARNING : PRESSURIZATION OF THE NORMAL LANDING GEAR SYSTEM, WITH AIRCRAFT ON WHEELS AND LANDING GEAR NORMAL CONTROL LEVER IN UP POSITION, CAN BE CARRIED OUT EXCEPTIONALLY IN CASE OF NEED.
(MAXIMUM PERMISSIBLE FREQUENCY - ONCE EVERY 100 FLIGHTS).

2. Nose Gear Brake Unit Bleeding

A. Equipment and Materials.

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Safety Sleeve - Nose Landing Gear Doors	E925002000

DESCRIPTION	PART NO.
Air/Hydrailic Tool Kit	
Lockwire - Dia 0.024 in. (0.60 mm) (Corrosion Resistant Steel)	
Cricuit Breaker Safety Clips	
Snapwire - Dia 0.020 in. (0.50 mm)	
Safety Collars - Main Landing Gear Door Actuating Cylinder	D921317000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Connect hydraulic ground power unit and pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Open gear doors by operating handle located on nose and LH main gear legs.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Install safety sleeves on door actuating jacks.

(11) Make certain that nose gear wheels are centred.

(12) Open access door 123 AB and, on relay box 2-123, connect terminal 14 B of test connector UT 1837 to ground.

(13) On nose gear, disconnect microswitch (G321) plug. Connect plug (G321A) terminal B to ground.

(14) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(15) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH UC WEIGHT SW "B" SYS	3-213	G 294	B 9

(16) Remove protective cap and cut and remove bleed valve lockwire.

(17) Connect one end of bleed tube (H) to bleed valve and submerge other end in hydraulic fluid (container (K)).

NOTE : Bleeding system component identification corresponds to indentification given in Air/Hydraulic tool kit.

WATNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

(18) On First Officer's instrument panel, press O/RIDE PRESS push-button and place landing gear Normal control lever in UP position.

(19) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing) and maintain a pressure of between 100 and 150 bars (1450 and 2175 psi) in the system.

C. Bleed (Ref. Fig. 301)

WARNING : SYSTEM PRESSURE : 100 TO 150 BARS (1450 TO 2175 PSI).
DURING BLEED OPERATIONS BLEED VALVE SHALL BE OPENED GRADUALLY TO AVOID UNTIMELY PROJECTION OF HYDRAULIC FLUID.

(1) Open bleed valve

(2) Close bleed valve when fluid flow is free of air bubbles Maximum torque 0.5 m.daN (45 lbf. in).

D. Close-Up

(1) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(3) Remove bleed tube.

NOTE : Take care to avoid contamination of brake pads and discs with hydraulic fluid.

(4) Wirelock bleed valve and install protective cap.

(5) Restore relay box 2-123 to normal operating condition and close access door 123 AB.

(6) Connect microswitch (G321) plug.

(7) Remove safety clips and tags and reset circuit breakers

(8) Remove safety sleeves from door actuating jacks.

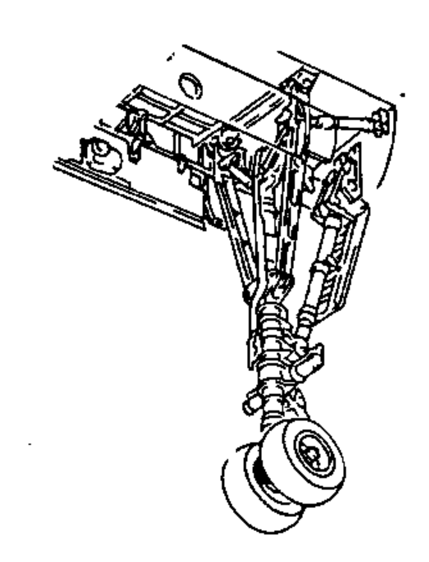
(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

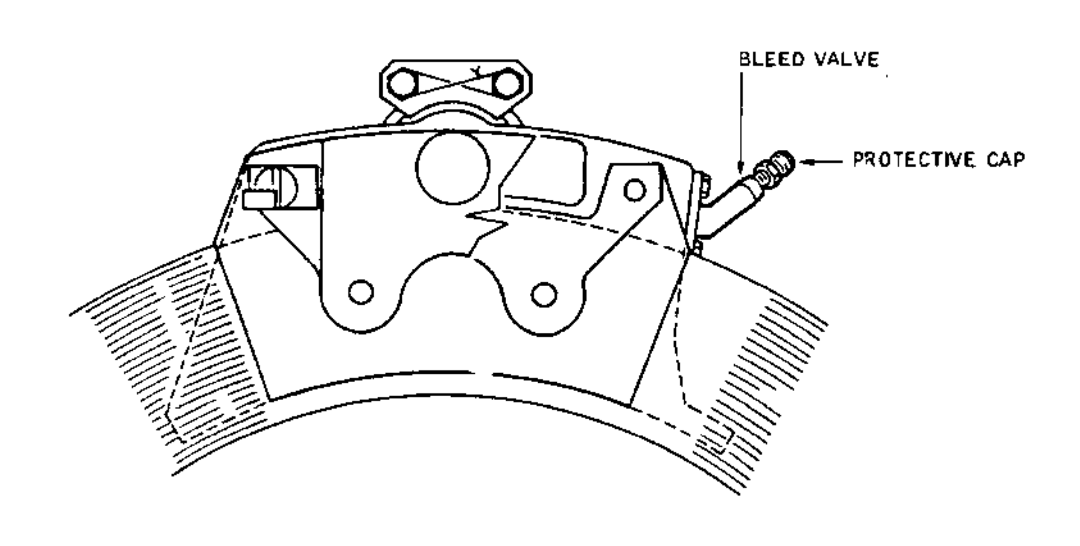
(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) Close doors by operating handle located on nose gear and LH main gear legs. Install locking caps.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.





CMA 32 46 00 3 AAM0

Nose Gear Brake Unit
Figure 301

(13) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing). Disconnect hydraulic ground power unit.

(14) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(15) Close access doors.

(16) Restore O/Ride to initial condition and safety with snapwire dia. 0.018 in (0.050 mm).

IN FLIGHT WHEEL BRAKING - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

With the aircraft in take-off configuration, make certain that nose gear wheels are braked.

2. Test of Nose Gear Wheel Brake System

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack-Lifting Capability Greater than 81600 daN (183621 lbf)	07-10-0001
Safety Pack Adapter	D920113200
Jacking Pad - Nose	D925370000
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001

DESCRIPTION	PART NO.
Safety Stay	
Electrical Ground Power Unit	
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
Safety Barriers	
Wheel Spinner	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Install safety stay.

(6) Position safety barriers.

(7) Make certain that the visor is not uplocked.

(8) Open door 151DB under fuselage and check that the pressure in Green hydraulic system accumulator is correct.

(9) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(10) Make certain that the following circuit breakers are reset :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
NOSE UC WEIGHT SW "A" SYS SUP		G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B10
NOSE U/C W/SW "B" SUP		G 296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) On Flight Engineer's HYDRAULIC MANAGEMENT panel, make certain that SHUT-OFF VALVES GREEN 2 magnetic indicator shows OPEN.

(12) Connect hydraulic ground power unit to Green hydraulic system.

(13) Position wheel spinner to drive nose gear wheels from rear.

C. Test

(1) Remove landing gear and shortening mechanism safety devices.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(3) Using wheel spinner, drive nose gear wheels into rotation.

(4) On First Officer's instrument panel, place landing gear

Normal control lever in UP position.

(a) Check that wheels are braked before nose gear achieves complete retraction.

WARNING : MOVE WHEEL SPINNER CLEAR OF NOSE GEAR TRAVEL RANGE BEFORE STARTING GEAR EXTENSION.

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(6) With landing gears downlocked, place landing gear Normal control lever in NEUTRAL position.

(7) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) On First Officer's instrument panel, make certain that the four green arrows on gears position indicating unit are illuminated (gears downlocked).

(9) Install landing gear and shortening mechanism safety devices.

D. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Remove safety barriers.

(4) Remove safety stay.

(5) Lower the aircraft onto its wheels.

(6) Close access doors.

BRAKE COOLING SYSTEM - DESCRIPTION AND OPERATION

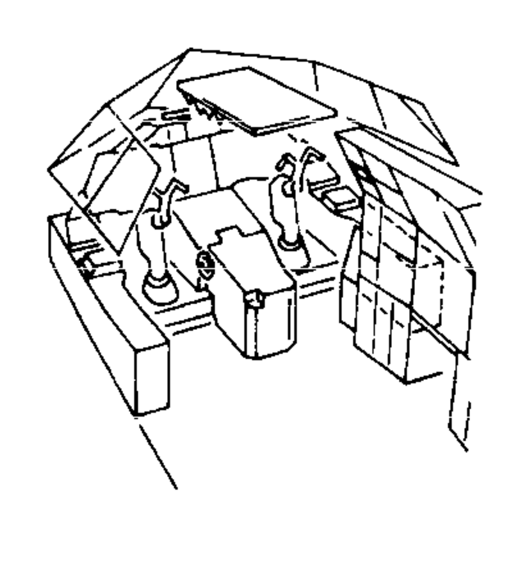
1. General

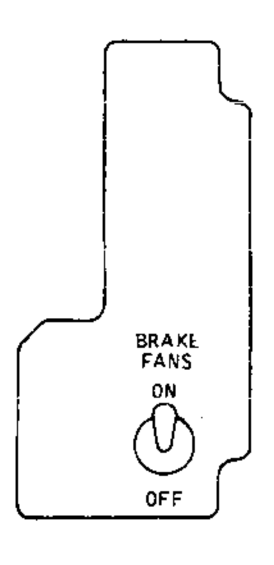
The landing gear wheels are fitted with a cooling system to prevent overheating of wheels and brakes during brake application.

R The system furthermore serves to rapidly lower brake temperature and prevent abnormal heating of the aircraft tyres during severe brake application.
Each gear wheel includes a separate brake cooling system.

2. Description

A. Control (Ref. Fig. 001)





CMA 32 47 00 0 AAM0

Brake Fan Control
Figure 001

Brake fans are controlled through a BRAKE FANS switch located on Flight Engineer's panel.

B. System Components (Ref. Fig. 002)

Each wheel cooling system includes :

(1) An electrically driven fan. The fan extracts air from the brake unit heat sink and expells it through a
R debris guard assembly.

(2) An electric motor installed in the wheel axle secured by an adaptor.

(3) A hollow electric motor shaft through which the tachometer drive shaft passes.

(4) A shield attached to the wheel. The shield includes a
R debris guard assembly through which heat sink air is expelled. In addition this shield drives the tachometer generator.

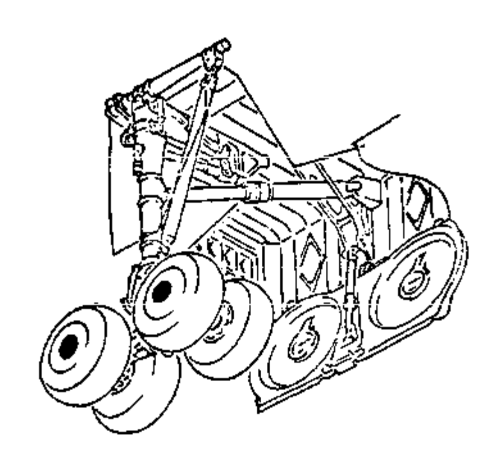
3. <u>Operation</u> (Ref. Fig. 003)

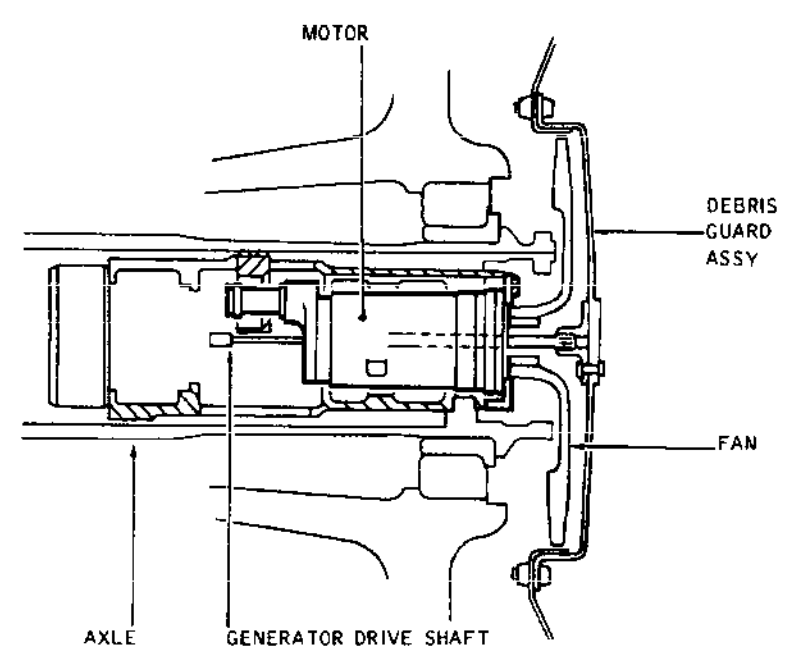
The fans are started up by placing the BRAKE FANS switch in ON position.

Landing gear must be downlocked before the fans will operate.

The LH landing gear in downlocked position energizes relay G 326. This relay serves to supply electrical power to the four LH landing gear fan motors.

The RH landing gear in downlocked position energizes relays G 330 and G 371.
These relays serve to supply electrical power to the four RH landing gear fan motors.

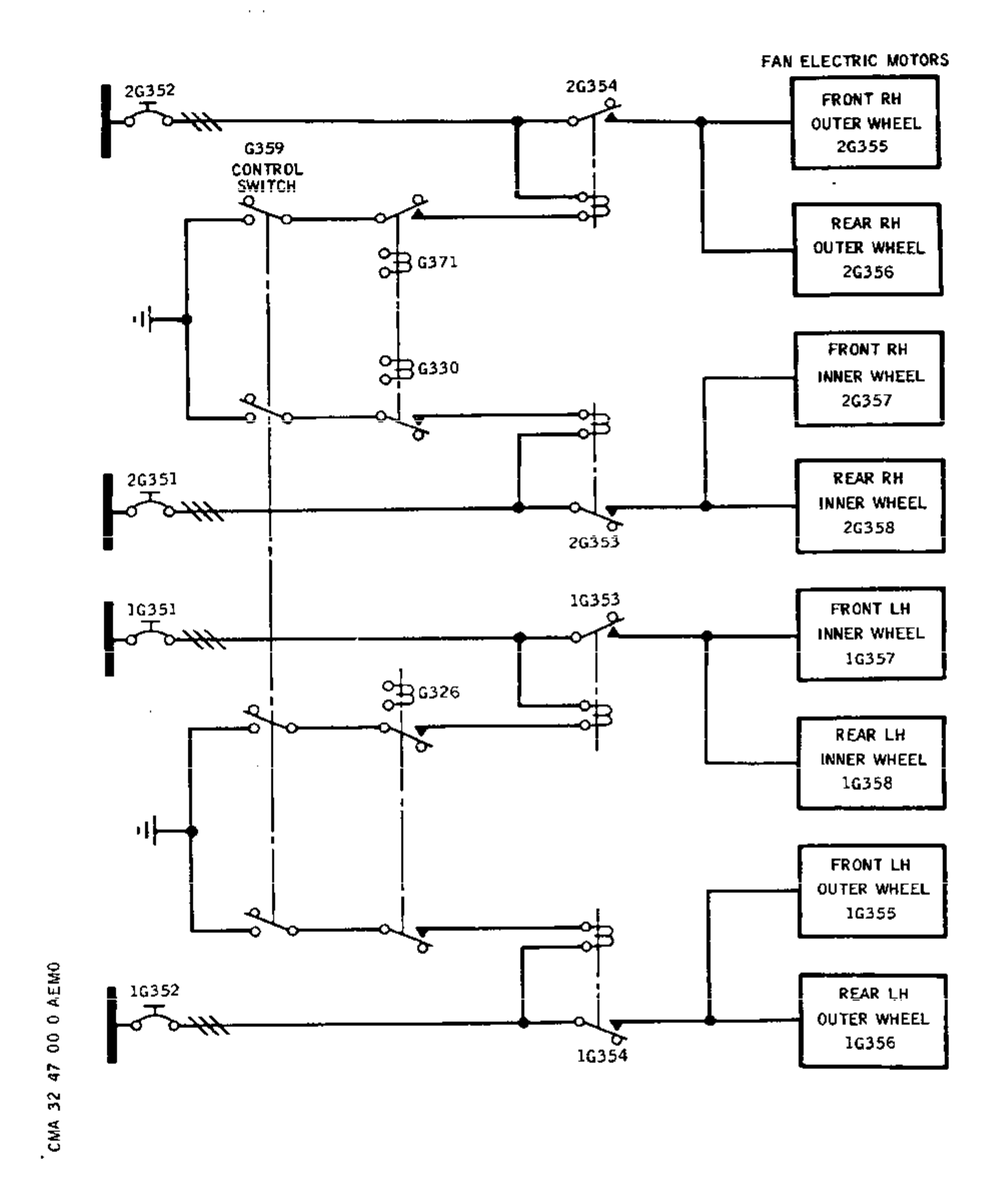




CMA 32 47 00 0 ACMO

R

Wheel Cooling Fan Unit
Figure 002



Brake Cooling System
Figure 003

BRAKE COOLING SYSTEM - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DETAILED IN 24-41-00, SERVICING.

1. General

The following trouble shooting procedures are intended to enable faults found in the brake cooling system to be quickly rectified. The defect can be isolated with the aid of the trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.
Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101).
The table provides information including component location, required for rectification.
All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated.
If the fault is not rectified check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Prepare

A. Check that the following circuit breakers are set :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP	1-213	G 295	M18
R	LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
	RH INBD BRAKE FAN SUP & CONT	13-215	2G 351	B 1
	LH OUTER BRAKE FAN SUP & CONT	14-215	1G 352	C 2
	LH INBD BRAKE FAN SUP & CONT	13-216	1G 351	E21
	RH OUTER BRAKE FAN SUP &	14-216	2G 352	F20

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
CONT			

B. Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

3. Trouble Shooting

```
*****************************************************
* On Flight Engineer's panel, place BRAKE FANS      *
* switch [1] in ON position. The eight main gear    *
* brake fans operate. IF                            *
*****************************************************
   ||        |     -----------------------------------------------------
   ||        |     | One brake fan does not operate. Replace motor     |
   ||        |     | corresponding to faulty brake fan.                |
   OK     NOT OK--| (1G355 [2]) (1G356 [3]) (1G357 [4]) (1G358 [5])|
   ||        |     | (2G355 [6]) (2G356 [7]) (2G357 [8]) (2G358 [9])|
   ||        |     -----------------------------------------------------
   ||        |
   ||        |     -----------------------------------------------------
   ||        |     | The four LH main gear fans (1G355 [2]) (1G356     |
   ||     NOT OK--| [3]) (1G357 [4]) (1G358 [5]) do not operate.      |
   ||        |     | Ref. Chart 101                                     |
   ||        |     -----------------------------------------------------
   ||        |
   ||        |     -----------------------------------------------------
   ||        |     | Both LH main gear outer fans (1G355 [2]) (fwd)    |
   ||     NOT OK--| and (1G356 [3]) (rear) do not operate.            |
   ||        |     | Ref. Chart 102                                     |
   ||        |     -----------------------------------------------------
   ||        |
   ||        |     -----------------------------------------------------
   ||        |     | Both LH main gear inner fans (1G 357 [4] (fwd)    |
   ||     NOT OK--| and (1G 358 [5]) (rear) do not operate.           |
   ||        |     | Ref. Chart 103                                     |
   ||        |     -----------------------------------------------------
   ||        |
   ||        |     -----------------------------------------------------
   ||        |     | Both RH main gear outer fans (2G355 [6]) (fwd)    |
   ||     NOT OK--| and (2G356 [7]) (rear) do not operate.            |
   ||        |     | Ref. Chart 104                                     |
   ||        |     -----------------------------------------------------
   ||        |
   ||        |     -----------------------------------------------------
   ||        |     | Both RH main gear inner fans (2G357 [8]) (fwd)    |
   ||     NOT OK--| and (2G358 [9]) (rear) do not operate.            |
   ||              | Ref. Chart 105                                     |
   ||              -----------------------------------------------------
*****************************************************
* Brake cooling system is serviceable. Restore      *
* system to normal operating condition.             *
*****************************************************
```

```
*************************************-----------------------------
* THE FOUR LH MAIN GEAR FANS (1G355  *| GROUND EQUIPMENT REQUIRED  |
* [2]) (1G356 [3]) (1G357 [4]) (1G358*|----------------------------|
* [5]) DO NOT OPERATE.               *| DESCRIPTION       PART NO  |
*************************************|----------------------------|
                                      | MULTIMETER                 |
                                      -----------------------------

*******************************************************************
* Open door 123 AB, on relay box 2-123, check voltage between test *
* connector UT 1837-7 terminals A and B.                           *
*******************************************************************
            ||                                      |
            0V                                     28V
            ||                                      |
-----------------------------------     ---------------------------
| Ref. 32-61-00, Trouble Shooting |     | Replace relay G326 [10] |
-----------------------------------     ---------------------------
```

Chart 101

```
****************************************-------------------------------
* BOTH LH MAIN GEAR OUTER FANS (1G355*| GROUND EQUIPMENT REQUIRED    |
* [2]) (FWD) AND (1G356 [3]) (REAR)  *|------------------------------|
* DO NOT OPERATE.                    *| DESCRIPTION         PART NO  |
**************************************|------------------------------|
                                      | MULTIMETER                   |
                                      --------------------------------

*********************************************************************
* Open door 123 BB, on relay box 14-123, check voltage between test*
* connector UT 1811-16 terminals A and B.                           *
*********************************************************************
           ||                                       |
           OV                                     115V
           ||                                       |
*************************************  -----------------------------
* On relay box 14-123, check voltage* | Replace relay 1G354 [14] |
* between test connector UT 1811-16 *  -----------------------------
* terminal A and ground.            *
*************************************  -----------------------------
           ||         |               | Replace circuit breaker  |
          115V       OV---------------| 1G352 [18]               |
           ||                          -----------------------------
           ||
*********************************************************************
* On BRAKE FANS switch G359 [1], ground terminal 2. The fans        *
* operate                                                           *
*********************************************************************
           ||                                       |
          YES                                       NO
           ||                                       |
--------------------------------------   ----------------------------
| Replace BRAKE FANS switch G359 [1] |   | Replace relay G326 [10] |
--------------------------------------   ----------------------------
```

Chart 102

BOTH LH MAIN GEAR INNER FANS (1G357 [4]) (FWD) AND (1G358 [5]) (REAR) DO NOT OPERATE.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO
MULTIMETER	

Open door 123 BB, on relay box 14-123, check voltage between test connector UT 1809-16 terminals A and B.

- 0V → On relay box 14-213, check voltage between test connector UT 1809-16 terminal A and ground.
  - 115V → On BRAKE FANS switch G359 [1], ground terminal 5. The fans operate.
    - YES → Replace BRAKE FANS switch G359 [1]
    - NO → Replace relay G326 [10]
  - 0V → Replace circuit breaker 1G351 [17]
- 115V → Replace relay 1G353 [13]

Chart 103

```
***************************************-------------------------------
* BOTH RH MAIN GEAR OUTER FANS (2G355*| GROUND EQUIPMENT REQUIRED    |
* [6]) (FWD) AND (2G356 [7]) (REAR)  *|------------------------------|
* DO NOT OPERATE.                    *| DESCRIPTION        PART NO   |
**************************************|------------------------------|
                                      | MULTIMETER                   |
                                      --------------------------------

*********************************************************************
* Open door 123 BB, on relay box 17-123, check voltage between test*
* connector UT 1810-16 terminals A and B.                           *
*********************************************************************
           ||                                      |
           0V                                    115V
           ||                                      |
************************************ ----------------------------
* On relay box 17-123, check voltage* | Replace relay 2G354 [16] |
* between test connector UT 1810-16 * ----------------------------
* terminal A and ground.            *
************************************ ----------------------------
           ||          |             | Replace circuit breaker  |
          115V         0V------------| 2G352 [20]               |
           ||                        ----------------------------
           ||
*********************************************************************
* On BRAKE FANS switch G359 [1], ground terminal 11. The fans       *
* operate.                                                          *
*********************************************************************
           ||                                      |
          YES                                      NO
           ||                                      |
-------------------------------------   ---------------------------
| Replace BRAKE FANS switch G359 [1] |   | Replace relay G371 [12] |
-------------------------------------   ---------------------------
```

Chart 104

```
**************************************---------------------------------
* BOTH RH MAIN GEAR INNER FANS (2G357*| GROUND EQUIPMENT REQUIRED     |
* [8]) (FWD) AND (2G358 [9]) (REAR)  *|-------------------------------|
* DO NOT OPERATE.                    *| DESCRIPTION         PART NO   |
**************************************|-------------------------------|
                                      | MULTIMETER                    |
                                      ---------------------------------

*********************************************************************
* Open door 123 BB, on relay box 17-123, check voltage between test*
* connector UT 1812-16 terminals A and B.                           *
*********************************************************************
          ||                                  |
          0V                                 115V
          ||                                  |
************************************* ----------------------------
* On relay box 17-123, check voltage* | Replace relay 2G353 [15] |
* between test connector UT 1812-16 * ----------------------------
* terminal A and ground.            *
************************************* ----------------------------
          ||        |                 | Replace circuit breaker  |
         115V       0V----------------| 2G351 [19]               |
          ||                          ----------------------------
          ||
*********************************************************************
* On BRAKE FANS switch G359 [1], ground terminal 8. The fans       *
* operate.                                                          *
*********************************************************************
          ||                                  |
         YES                                  NO
          ||                                  |
-------------------------------------- --------------------------
| Replace BRAKE FANS switch G359 [1] | | Replace relay G330 [11] |
-------------------------------------- --------------------------
```

Chart 105

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
[1] BRAKE FANS switch		12-214	G359	On Flight Engineer's panel	32-00-00 R/I	32-47-01
[2] Motor. LH MLG fwd outer fan		733	1G355	Inside LH MLG fwd axle	32-47-11 R/I	32-47-01
[3] Motor. LH MLG rear outer fan		733	1G356	Inside LH MLG rear axle	32-47-11 R/I	32-47-01
[4] Motor. LH MLG fwd inner fan		733	1G357	Inside LH MLG fwd axle	32-47-11 R/I	32-47-01
[5] Motor. LH MLG rear inner fan		733	1G358	Inside LH MLG rear axle	32-47-11 R/I	32-47-01
[6] Motor. RH MLG fwd outer fan		743	2G355	Inside RH MLG fwd axle	32-47-11 R/I	32-47-01
[7] Motor. RH MLG rear outer fan		743	2G356	Inside RH MLG rear axle	32-47-11 R/I	32-47-01
[8] Motor. RH MLG fwd inner fan		743	2G357	Inside RH MLG fwd axle	32-47-11 R/I	32-47-01
[9] Motor. RH MLG rear inner fan		743	2G358	Inside RH MLG rear axle	32-47-11 R/I	32-47-01
[10] Relay	123 AB	2-123	G326	Fwd rack under floor	32-00-00 R/I	32-47-01
[11] Relay	123 BB	3-123	G330	Rear rack under floor	32-00-00 R/I	32-47-01

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ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[12] Relay	123 BB	3-123	G371	Rear rack under floor	32-00-00 R/I	32-47-01
[13] Relay	123 BB	14-123	1G353	Rear rack under floor	32-00-00 R/I	32-47-01
[14] Relay	123 BB	14-123	1G354	Rear rack under floor	32-00-00 R/I	32-47-01
[15] Relay	123 BB	17-123	2G353	Rear rack under floor	32-00-00 R/I	32-47-01
[16] Relay	123 BB	17-123	2G354	Rear rack under floor	32-00-00 R/I	32-47-01
[17] Circuit breaker		13-216	1G351	E21	24-50-00 R/I	32-47-01
[18] Circuit breaker		14-215	1G352	C2	24-50-00 R/I	32-47-01
[19] Circuit breaker		13-215	2G351	B1	24-50-00 R/I	32-47-01
[20] Circuit breaker		14-216	2G352	F20	24-50-00 R/I	32-47-01

Component Identification
Table 101

FAN MOTOR - REMOVAL/INSTALLATION

R
R WARNING : CHECK THAT LANDING GEAR GROUND SAFETY DEVICES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. General

The fan motor and tachometer generator are mounted inside a support assembly fitted in each main landing gear axle.

R

All operations on the electrical supply connector of a fan motor necessitate removal of fan motor support/tachometer generator
R assembly.

2. Fan Motor

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Lockwire - Dia. 0.80 mm (0.032 in.), (Corrosion Resistant Steel) R	
Special Products (Ref. 20-30-00, No.103)	

R

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On Flight Engineer's panel, make certain that BRAKE FANS control switch is in OFF position.

(3) Depending on the fan motor to be removed, trip, safety and tag one of the following circuit breakers :

(a) LH forward and aft inner fan motors.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH INBD BRAKE FAN SUP & CONT	13-216	1G 351	E21

(b) LH forward and aft outer fan motors

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH OUTER BRAKE FAN SUP & CONT	14-215	1G 352	C 2

(c) RH forward and aft inner fan motors.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH INDB BRAKE FAN SUP & CONT	13-215	2G 351	B 1

R

(d) RH forward and aft outer fan motors

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH OUTER BRAKE FAN SUP & CONT	14-216	2G 352	F20

(4) Remove fan (Ref. 34-47-12, Removal/Installation).

C. Remove

(1) Cut and remove lockwire, remove screws (1). Retain washers (2) for reinstallation.

(2) Remove flange (3) attaching fan motor (7).

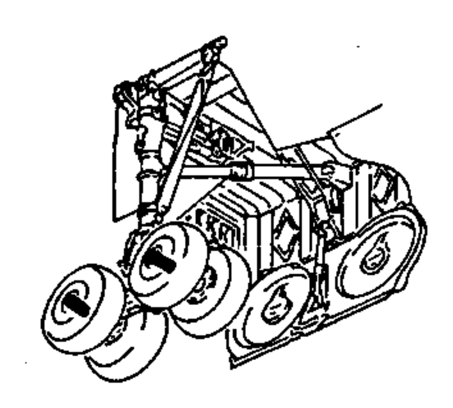
(3) Remove fan motor by disengaging from fan motor/tachometer generator support (6) assembly.

NOTE : Electrical connector (5) is disconnected automatically from fan motor socket.

D. Preparation of Replacement Component

(1) Coat O-ring (4) with Product No.103.

(2) Install O-ring in outer groove of fan motor body.



FLANGE O-RING
1-2
3
4
6
SUPPORT
5 ELECTRICAL CONNECTOR
7 FAN MOTOR
8 LOCATING PIN

CMA 32 47 11 4 AAM0

Fan Motor
Figure 401

E. Install

(1) Engage fan motor in support (6) assembly and position it so that locating pin (8) engages the longitudinal groove of fan motor body.

NOTE : During installation of fan motor on support assembly, electrical connector and fan motor socket are aligned. They connect when the motor is on stops.

(2) Position and attach flange (3) by means of screws (1) and washers (2).

(a) Torque screws (1) to between 0.05 and 0.1 m.daN (4.5 and 9 lbf.in.).

R (b) Safety screws (1) with lockwire (Ref. 20-21-13).

(3) Install fan (Ref. 32-47-12, Removal/Installation).

(4) Remove safety clip and tag and reset the circuit breaker tripped in paragraph B.

F. Tests

Carry out a test (Ref. 32-47-11, Adjustment/Test).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

FAN MOTOR - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

CHECK THAT LANDING GEAR GROUND SAFETY DEVICES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. General

Operation of the eight brake fan motors is controlled from a switch located on Flight Engineer's panel.
Operation is only possible when main gear is downlocked.

2. Fan Motors Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Make certain that the following circuit breakers are set :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP	1-213	G 295	M18
R	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
	RH INBD BRAKE FAN SUP & CONT	13-215	2G 351	B 1
	LH INBD BRAKE FAN SUP & CONT	13-216	1G 351	E21
	LH OUTER BRAKE FAN SUP & CONT	14-215	1G 352	C 2

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH OUTER BRAKE FAN SUP & CONT	14-216	2G 352	F20

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Tests

(1) On Flight Engineer's panel, place BRAKE FANS control switch in ON position.

(a) Check that fans rotate.

(b) Check on each wheel that cooling air flows in the correct direction, from inner side to outer side of the wheel.

(2) On Flight Engineer's panel, place BRAKE FANS control switch in OFF position.

(a) The fans stop rotating.

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit. (Ref. 24-41-00, Servicing).

COOLING FAN - REMOVAL/INSTALLATION

WARNING : CHECK THAT LANDING GEAR GROUND SAFETY DEVICES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. General

Each main gear wheel is fitted with a cooling fan driven by a motor mounted in the gear axle.

To gain access to the cooling fan it is necessary to remove the debris guard assembly attached to the wheel.

2. Cooling Fan

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Holding Spanner - Brake Cooling Fan	E925082000
Common Grease (Ref. 20-30-00, No.057)	
R Cleaning Fluid (Ref. 20-30-00, No.468)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On Flight Engineer's panel, make certain that BRAKE FANS control switch is in OFF position.

(3) Depending on the fan to be removed, trip, safety and tag one of the following circuit breakers :

(a) RH forward and aft inner fans

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH INBD BRAKE FAN SUP & CONT	13-215	2G 351	B 1

(b) LH forward and aft outer fans

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH OUTER BRAKE FAN SUP & CONT	14-215	1G 352	C 2

(c) LH forward and aft inner fans

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH INBD BRAKE FAN SUP & CONT	13-216	1G 351	E21

(d) RH forward and aft outer fans

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH OUTER BRAKE FAN SUP & CONT	14-216	2G 352	F20

C. Remove

(1) Remove screws (1) with washers (2) and remove debris guard assembly (3).

(2) Withdraw drive shaft (10) from tachometer generator.

(3) Remove stop spring (4).

(4) Hold fan with spanner E925082000, remove nut (8) and retain stop washer (9) for reinstallation.

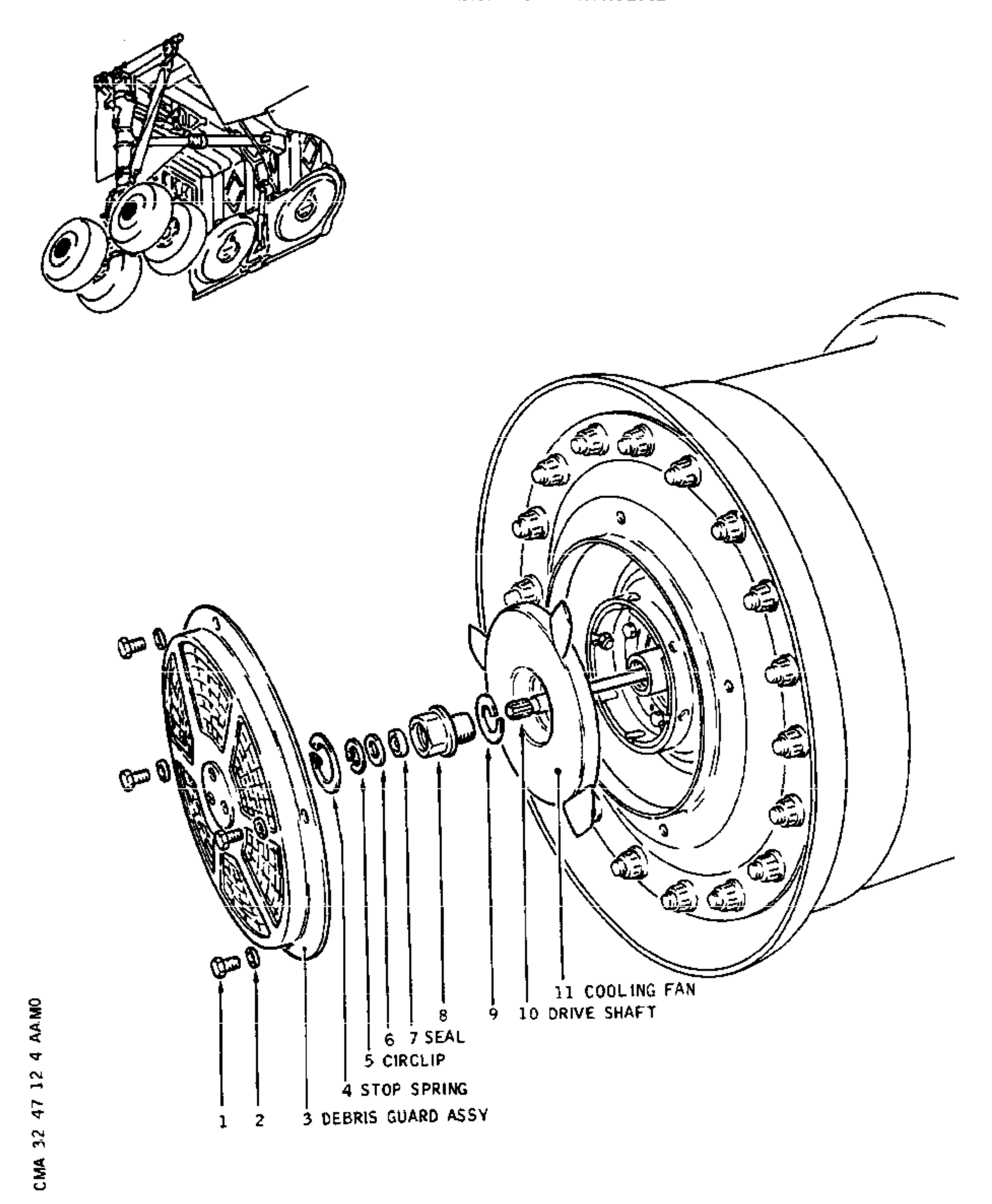
(5) Remove cooling fan (11).

D. Preparation of Replacement Component

(1) Remove nut (8), circlip (5), washer (6) and seal (7).

(a) Discard seal (7).

(b) Clean nut (8) with Product No.468 and air dry.



Cooling Fan
Figure 401

(2) Insert new seal (7) in nut (8). Install washer (6) and circlip (5).

(3) Clean drive shaft (10) with Product No.468 and air dry.

E. Install

(1) Lightly coat cooling fan bearing surfaces with Product No.057.

(2) Position cooling fan. Align key with motor shaft groove. Place fan in stop position on motor shaft.

(3) Coat nut (8) threads with Product No.057.

(4) Equip nut (8) with new stop washer (9) and tighten.

(a) Hold fan with spanner E925082000 and torque nut (8) to 25 lbf.ft. (3.389 m.daN).

(5) Install stop spring (4).

(6) Check that cooling fan rotates freely and check the gap between fan blade tips and wheel cone adjacent face. This gap should not be below 0.020 in. (0.50 mm).

(7) Slightly coat the splined ends of tachometer generator drive shaft (10) with product No.057.

(8) Engage tachometer generator drive shaft (10) through fan motor, the end with the larger diameter towards nut (8).

(9) Check drive shaft (10) for correct engagement and free rotation.

(10) Fully engage splined base of debris guard assembly (3) on tachometer generator drive shaft (10).

(a) Coat screw (1) threads with Product No.057.

(b) Position debris guard assembly (3) and attach by means of screws (1) and washers (2).

(c) Torque screws (1) to 21 lbf.in. (0.237 m.daN).

(11) Remove safety clip and tag and reset the relevant circuit breaker tripped in paragraph B.

F. Tests

Not applicable

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

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COOLING FAN - INSPECTION/CHECK

WARNING : CHECK THAT LANDING GEAR GROUND SAFETY DEVICES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. General

Check for correct condition of fan

2. Cooling Fan

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Feeler Gauges	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On Flight Engineer's panel make certain that BRAKE FANS control switch is in OFF position.

(3) According to position of fan to be checked, trip, safety and tag one of the following circuit breakers :

(a) RH forward and aft inner fans.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH INBD BRAKE SUP & CONT	13-215	2G 351	B 1

(b) LH forward and aft outer fans.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH OUTER BRAKE FAN SUP & CONT	14-215	1G 352	C 2

(c) LH forward and aft inner fans

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
LH INBD BRAKE FAN SUP & CONT	13-216	1G 351	E21

(d) RH forward and aft outer fans

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RH OUTER BRAKE FAN SUP & CONT	14-216	2G 352	F20

(4) Remove debris guard assembly.

B C. Check

B Make certain that the fan rotates freely and check space
B between blade tips and wheel cone adjacent area.
B This space must not be less than 0.020 in. (0.50 mm).

B Check for correct condition of blade leading edges.
B Damage or corrosion on fan blade leading edges is accepted.
B It is important to check that damage or corrosion is approx-
B imately identical on each blade so that fan static balance
B remains within tolerance.
B An unbalance of the fan greater than 2 gramme/inches (50.8
B gramme/mm) necessitates removal of fan for rebalancing.
B Check that fan balancing rivets are well secured.

B Make certain that there are no cracks on fan rotor and bla-
B des.

B Check debris guard assembly for correct condition. Make cer-
B tain that there are no cracks and check that the debris
B guard assembly wires are well secured. (For guard repairs
B refer to RS.K32-40631). Make certain that the coupling end
B is well secured to the debris guard assembly. Check the
B coupling end grooves for correct condition.

B D. Check Drive Shaft.

B Check spad drive shaft for signs of pick-up between shaft
B and cooling fan attachment nut.

B Scoring on the large dia. of the shaft is acceptable pro-
B vided all sharp edges are removed from the shaft dia. and
B inside dia. of the cooling fan attachment nut and that the
B splines are in good condition.
B On assembly ensure that the cooling fan operates freely and
B that the drive shaft can be spun freely without any sign of
B pick-up.

B E. Close-Up

B (1) Install debris guard assembly.

B (2) Remove safety clip and tag and reset the circuit
B breaker.

END OF THIS SECTION

NEXT

R After SB 32-079-01 For A/C 001-007,

FLAT TYRE DETECTION SYSTEM - DESCRIPTION AND OPERATION

1. General

The flat tyre detection system serves to alert the flight crew in the event of an underinflated or burst tyre and thus warn of an overload of at least 30% on the adjacent wheel at maximum take-off weight.

2. System Components

The flat tyre detection system is comprised of the following components :

- A FLAT TYRE DETECTION UNIT (G439) installed on shelf 5-216
- Four strain gage bridges (G441, G442, G443, G444) installed on the main gear bogie beams
- A push-to-reset TYRE/SYSTEM light (G434) installed on Flight Engineer's panel 12-214
- A TYRE light (G432) on Captain's instrument panel 2-211-3
- A TYRE light (G433) on First Officer's instrument panel 2-212-2
- A WHEEL light (G346) on First Officer's instrument panel 2-212.

3. FLAT TYRE DETECTION UNIT

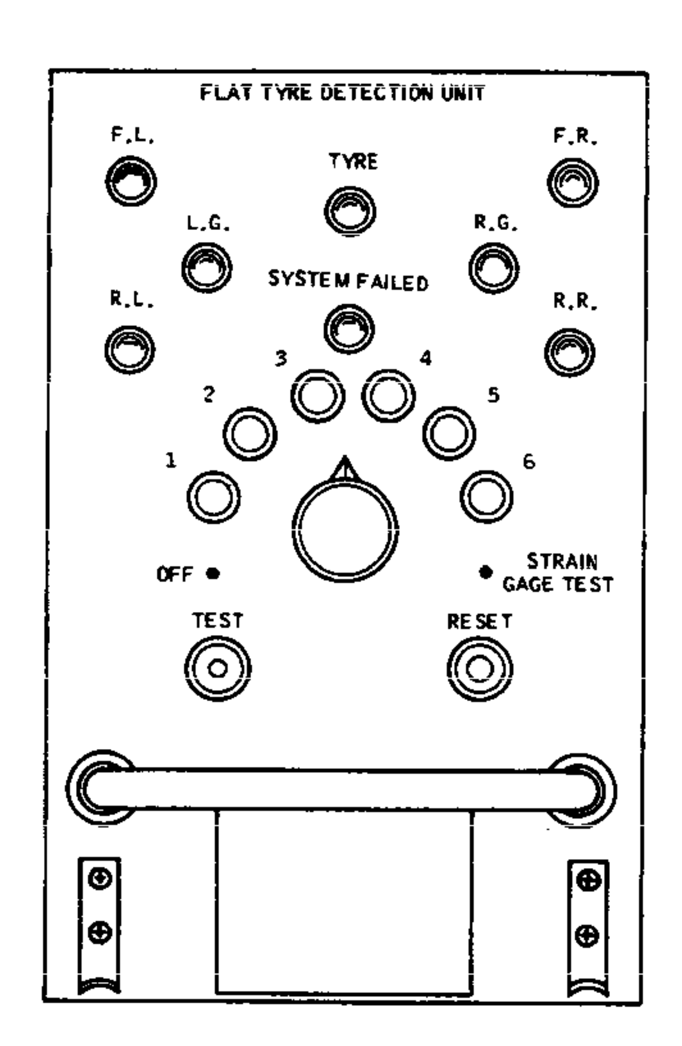
A Description (Ref. Fig. 001)

The FLAT TYRE DETECTION UNIT is housed in a 1/2 ATR short case.

(1) The front panel is equipped with the following :

(a) Eight fault indicator lights :

- A red TYRE light
- An amber SYSTEM FAILED light
- Two white flat tyre location lights (LG and RG)
- Four amber strain gage drift location lights (FL, RL, FR, RR).



CMA 32 48 00 0 AAM0

FLAT TYRE DETECTION UNIT : Front View
Figure 001

(b) An eight-position rotary selector.

(c) Six light-emitting diodes corresponding to rotary selector positions 1-2-3-4-5- and 6.

(d) A hold-to-TEST switch.

(e) A RESET pushbutton.

(f) A handle

(g) Two lugs for securing the unit in the rack.

(2) The rear panel is equipped with a connector for connection to the aircraft wiring.

R BEFORE SB 32-087 FOR A/C 001-007

B. Operation (Ref. Fig. 002)

(1) Flat tyre

When a LH OR RH main gear tyre is flat, a signal is applied to the corresponding calculation channel comprised of amplifiers and adders.
The calculated signal is sent to a comparator which causes the channel concerned to change state and send an error signal to the comparator of the second channel which changes state to conform that the flat tyre signal is valid.
The triggering signal delivered by the comparators is applied to gate P4 and then to the TYRE module via the two-position IN-OUT electronic switch controlled by gate P5.

(a) Electronic switch in IN position (gate P5 inhibited).

The signal delivered by gate P4 is applied directly to the TYRE module causing.

(a1) TYRE light on unit front panel to come on.

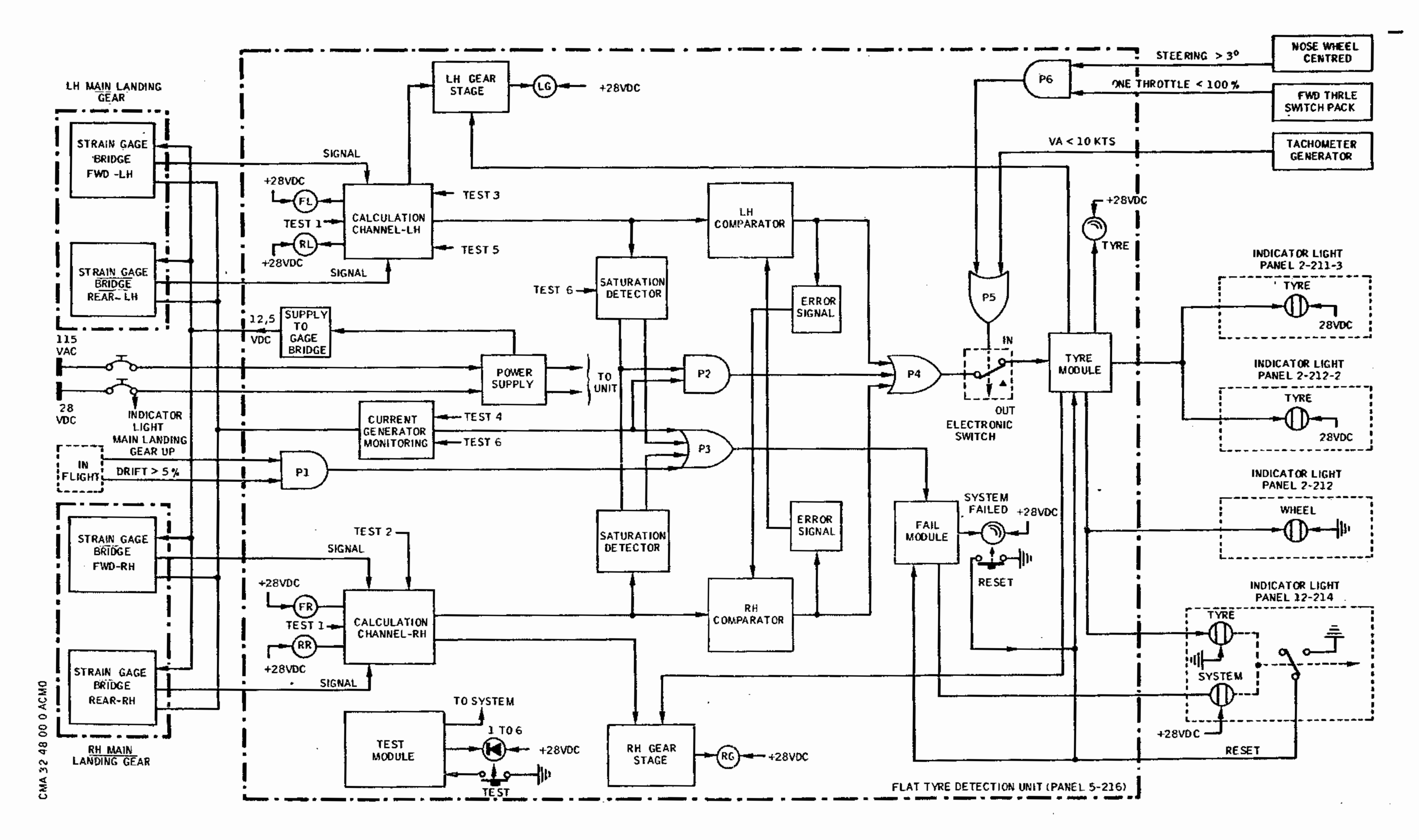
(a2) LG or RG light on unit front panel to come on.

(a3) The tyre signal to be directed to the flight compartment panels.

(b) Electronic switch in OUT position (gate P5 enabled).

Gate P5 receives two control signals :

INTENTIONALLY BLANK



Flat Tyre Detection - Block Diagram
Figure 002

- one from the tachometer generator for an aircraft speed VA less than 10 Kts.
- the other from gate P6.

(b1) For a tyre signal at a speed below 10 Kts (gate P6 inhibited) gate P5 delivers a signal which causes the electronic switch OUT contacts to close thus inhibiting the TYRE module.

(b2) For a flat tyre signal at a speed above 10 Kts with gate P6 enabled (nose wheel steering angle greater than 3° and neither throttle control lever in full throttle position) gate P5 delivers a signal which causes the electronic switch OUT contacts to close thus inhibiting the TYRE module.

(2) Strain gage power supply failure

In the event of power supply failure to one or several strain gages, the CURRENT GENERATOR MONITORING stage delivers a signal to gate P3 which delivers an output signal to the FAIL module which causes :

- SYSTEM FAILED light on unit front panel to come on
- SYSTEM light on Flight Engineer's panel to come on

Gate P2 being inhibited the TYRE module is also inhibited.

(3) Rupture of a strain gage detection line

In the event of rupture of a strain gage detection line, the corresponding calculation channel (LH or RH) is saturated. The SATURATION DETECTOR stage concerned is supplied and applies a signal to gate P3 which delivers an output signal to the FAIL module which causes :

- SYSTEM FAILED light on unit front panel to come on
- SYSTEM light on Flight Engineer's panel to come on

Gate P2 being inhibited the TYRE module is also inhibited.

(4) Tyre burst

When a tyre busrts, pieces of tread rubber may damage the cable looms on the gear concerned. In this case the calculation channel concerned saturates and the strain gages are no longer supplied.

Gates P2 and P3 therefore receive a signal from the SATURATION DETECTORS and the CURRENT GENERATOR MONITORING stage.

Gate P3 delivers an output signal to the FAIL module which causes :

- SYSTEM FAILED light on unit front panel to come on
- SYSTEM light on Flight Engineer's panel to come on

Gate P2 directs the SYSTEM signal to gate P4, the electronic switch and the TYRE module causing :

- TYRE light on unit front panel to come on
- TYRE lights on flight crew panels to come on
- LG or RG on unit front panel to indicate the gear concerned.

(5) Strain gage drift (in flight)

In the event of strain gage drift, unbalance is created in one branch resulting in disagreement between the two calculation channels.
Gate P1 delivers a signal to gate P3 which directs the resulting signal to the FAIL module causing :
- SYSTEM FAILED light on unit front panel to come on
- SYSTEM light on Flight Engineer's panel to come on

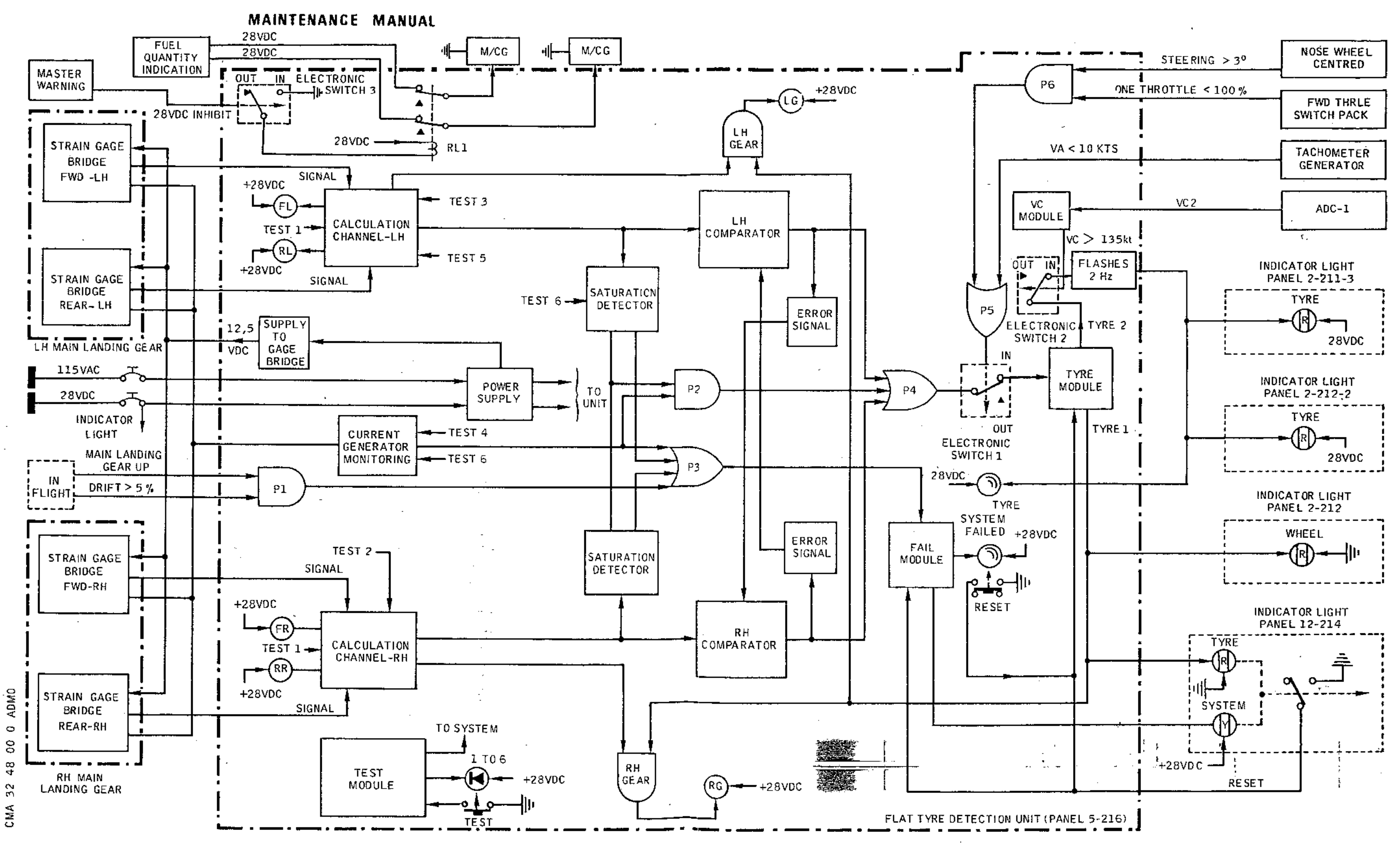
Gate P2 being inhibited the TYRE module is also inhibited.
The strain gage drift light(s) FL, RL, FR or RR on unit front panel come on.

R After SB 32-087 for A/C 001-007

R B. Operation (Ref. Fig. 002-A)

R (1) Flat tyre

When a LH OR RH main gear tyre is flat, a signal is applied to the corresponding calculation channel comprised of amplifiers and adders.
The calculated signal is sent to a comparator which causes the channel concerned to change state and send an error signal to the comparator of the second channel which changes state to conform that the flat tyre signal is valid.



Flat Tyre Detection-Block diagram
Figure 002A

The triggering signal delivered by the comparator is applied to gate P4 and then to the TYRE module via the two position IN-OUT electronic switch 1 controlled by gate P5.

(a) Electronic switch 1 in IN position (Gate P5 inhibited and electronic switch 2 in IN position)

<u>NOTE</u> : Electronic switch 2 is in IN position when airspeed as provided by the Air Data Computer (ADC 1) is less than 135 Kts.

The signal delivered by gate P4 is applied directly to the TYRE module causing :

(a1) TYRE light on unit front panel to come on.

(a2) LG or RG light on unit front panel to flash at a frequency of 2 Hz.

(a3) The TYRE 1 signal to be sent to the WHEEL light on First Officer's instrument panel and TYRE light on Flight Engineer's panel ; these lights come on.

(a4) The TYRE 2 signal to be sent to the electronic switch 2 in IN position which directs it to the flasher ; TYRE lights on Captain's and First Officer's instrument panels flash at a frequency of 2 Hz.

(b) Electronic switch 1 in IN position (Gate 15 inhibited and electronic switch 2 in OUT position).

<u>NOTE</u> : Electronic switch 2 is in OUT position when the airspeed as delivered by the Air Data Computer (ADC 1) is greater than 135 Kts.

The signal delivered by gate P4 is applied directly to the TYRE module causing :

(b1) TYRE light on unit front panel to be inhibited by electronic switch 2.

(b2) LG or RG light on unit front panel to come on indicating the landing gear concerned.

R (b3) The TYRE 1 signal to be sent to the WHEEL light on First Officer's instrument panel and TYRE light on flight Engineer's panel ; these lights come on.

R (b4) The signal to be sent to electronic switch 2 in OUT position which inhibits the flasher signal to the TYRE lights on Captain's and First Officer's instrument panels.

R (c) Electronic switch 1 in OUT position (Gate P5 enabled).

R Gate P5 receives two control signals :

R - one from the tachometer generator for an aircraft speed VA less than 10 Kts.
R - the other from gate P6.

R (c1) For a tyre signal at a speed below 10 Kts (Gate P6 inhibited) gate P5 delivers a signal which causes the electronic switch 1 OUT contacts to close thus inhibiting the TYRE module.

R (c2) For a flat tyre signal at a speed above 10 Kts with gate P6 enabled (nose wheel steering angle greater than 3° and neither throttle control lever in full throttle position) gate P5 delivers a signal which causes the
R electronic switch 1 OUT contacts to close thus inhibiting the TYRE module.

(2) Strain gage power supply failure

In the event of power supply failure to one or several strain gages, the CURRENT GENERATOR MONITORING stage delivers a signal to gate P3 which delivers an output signal to the FAIL module which causes :

- SYSTEM FAILED light on unit from panel to come on
R - The signal to be directed to the SYSTEM light on
R Flight Engineer's panel ; the light comes on.

Gate P2 being inhibited the TYRE module is also inhibited.

(3) Rupture of a strain gage detection line

In the event of rupture of a strain gage detection line, the corresponding calculation channel (LH or RH) is saturated. The SATURATION DETECTOR stage concerned is supplied and applies a signal to gate P3 which delivers an output signal to the FAIL module which causes :

- SYSTEM FAILED light on unit front panel to come on
- The signal to be directed to the SYSTEM light on Flight Engineer's panel ; the light comes on.

Gate P2 being inhibited the TYRE module is also inhibited.

(4) Tyre burst

When a tyre bursts, pieces of tread rubber may damage the cable looms on the gear concerned. In this case the calculation channel concerned saturates and the strain gages are no longer supplied.

Gates P2 and P3 therefore receive a signal from the SATURATION DETECTORS and the CURRENT GENERATOR MONITORING stage.

(a) Gate P3 delivers a warning signal to the FAIL module which causes :

- SYSTEM FAILED light on unit front panel to come on
- The signal to be directed to the SYSTEM light on Flight Engineer's panel ; the light comes on.

(b) Gate P2 directs the warning signal to gate P4, electronic switch 1 (in IN position) and the TYRE module causing :

(b1) With electronic switch 2 in IN position :

- TYRE light on unit front panel to flash at a frequency of 2 Hz.
- LG or RG light on unit front panel to come on indicating the gear concerned.
- The TYRE 2 signal to be sent to electronic switch 2 which directs it to the flasher ; TYRE lights on Captain's and First Officer's instrument panels flash at a frequency of 2 Hz.

(b2) With electronic switch 2 in OUT position :

- Inhibition of TYRE light on unit front panel.
- LG or RG light on unit front panel to come on indicating the gear concerned.
- The TYRE 1 signal to be sent to the WHEEL light on First Officer's instrument panel and TYRE light on Flight Engineer's panel ; these lights come on.
- The signal to be sent to electronic switch 2 which inhibits the flasher signal to the TYRE lights on Captain's and First Officer's instrument panels.

(5) Strain gage drift (in flight)

In the event of strain gage drift, unbalance is created in one branch resulting in disagreement between the two calculation channels.

(a) Gate P1 delivers a signal to gate P3 which directs the resulting signal to the FAIL module causing :

- SYSTEM FAILED light on unit front panel to come on
- the signal to be directed to the SYSTEM light on Flight Engineer's panel ; the light comes on

(b) Gate P2 being inhibited the TYRE module is also inhibited.
The strain gage drift light(s) FL, RL, FR or RR on unit front panel come on.

(6) M/CG warning lights

(a) Circuit inhibition

When the Master Warning system applies a "+ 28VDC INHIBIT" signal to electronic switch 3, the switch goes to IN position thus connecting relay RL1 to ground. Relay RL1 is energized and the two normally open contacts disconnect the signals delivered by the FUEL QUANTITY INDICATION system to the M/CG warning lights on the Captain's and First Officer's instrument panels.

R (b) Circuit reset

R When the + 28VDC INHIBIT signal from the Master
R Warning system is no longer applied to electro-
R nic switch 3, the switch goes to OUT position
R thus disconnecting the ground to relay R1 Relay
R R1 is de-energized and the two normally closed
R contacts connet the signals delivered by the
R FUEL QUANTITY INDICATION system to the M/CG
R warning lights on Captain's and First Officer's
R instrument panels.

R After SB 32-079-1 For A/C 001-007

C. Tests

A TEST module enables one or several failures to be simulated.
The TEST module is inhibited when the rotary selector is in OFF position

Tests are performed as follows :

- Place rotary selector in one of the test positions

- Place and hold TEST switch in TEST position.

If the result of the test is correct, the LED corresponding to the position of the rotary selector comes on as well as the other lights corresponding to the selected test. Upon completion of the test release TEST switch and press RESET pushbutton.

Tests corresponding to the various positions of the rotary selector :

OFF position	Test circuit inhibited
Position 1	Simulation of drift at the four strain gages under the following conditions : Va > 10 Kts, 1 throttle control lever in full throttle position, gear uplocked.
Position 2	Simulation of flat tyre on RH gear with Va > 10 Kts
Position 3	Simulation of flat tyre on LH gear with Va < 10 Kts
Position 4	Simulation of current generator failure with Va < 10 Kts

Position 5	Simulation of strain gage amplifier saturation and flat tyre on LH gear with Va > 10 Kts
Position 6	Simulation of cable loom rupture on LH gear with Va > 10 Kts
STRAIN GAGE TEST position	Simulation of strain gage drift with gears uplocked.

D. Reset

The RESET pushbutton serves to restore the lights on the unit front panel and flight compartment panels to initial configuration. The system is reset after each test performed using the rotary selector.

4. Strain Gages (Ref. Fig. 003)

Eight strain gage bridges are installed on the main gear bogie beams (four per gear). Each half bogie beam is equipped with two strain gage bridges (one normal and one standby) protected by a metal cover on which the two connectors are mounted.

The strain gages serve to measure various mechanical deformations in the structural components. Only the signals resulting from a flat tyre are selected. The signals from the forward and rear strain gages are subtracted to eliminate parasite twist signals resulting from lateral loads.
Twist signals resulting from pivoting subsit but are inhibited if :

- aircraft speed (Va) is below 10 Kts
- nosewheel steering angle is greater than 3°
- no throttle control lever is in full thrust position.

The strain gages are supplied with 35 mA direct current and are monitored by the FLAT TYRE DETECTION UNIT.

NOTE : The strain gages are bonded on the bogie beam.
In the event of failure :
- of the normal strain gage, use the standby strain gage
R - of both the normal and standby strain gages,
R repair is required (Ref. 32-48-00 Approved Repairs).

5. Lights (Ref. Fig. 004)

The flat tyre detection system lights located on the various flight compartment panels enable the flight crew to identify the type of fault and make the necessary decisions.

- TYRE light on Captain's instrument panel to come on
- TYRE and WHEEL lights on First Officer's instrument panel to come on.
- double TYRE-SYSTEM light on Flight Engineer's panel to come on
- TYRE, SYSTEM FAILED and flat tyre location lights LG or RG on FLAT TYRE DETECTION UNIT to come on.

(b) Flight crew action

(b1) As for a flat tyre.

B. In Flight

(1) Flat tyre

(a) Indicating

(a1) TYRE light on Captain's instrument panel comes on

(a2) TYRE and WHEEL lights on First Officer's instrument panel come on

(a3) TYRE light on Flight Engineer's panel comes on

(b) Flight crew action :

(b1) On FLAT TYRE DETECTION UNIT front panel, check flat tyre location lights LG and RG.

(2) Strain gage drift

(a) Indicating

If drift corresponding to an overload of more than 5% occurs at one or several strain gages with the landing gear retracted , a detection signal is applied to the FLAT TYRE DETECTION UNIT causing :

- SYSTEM light on Flight Engineer's panel to come on
- SYSTEM FAILED light on FLAT TYRE DETECTION UNIT to come on

(b) Flight crew action

On FLAT TYRE DETECTION UNIT check strain gage drift location lights FL, RL, FR and RR.

C. System Check

(1) Lights

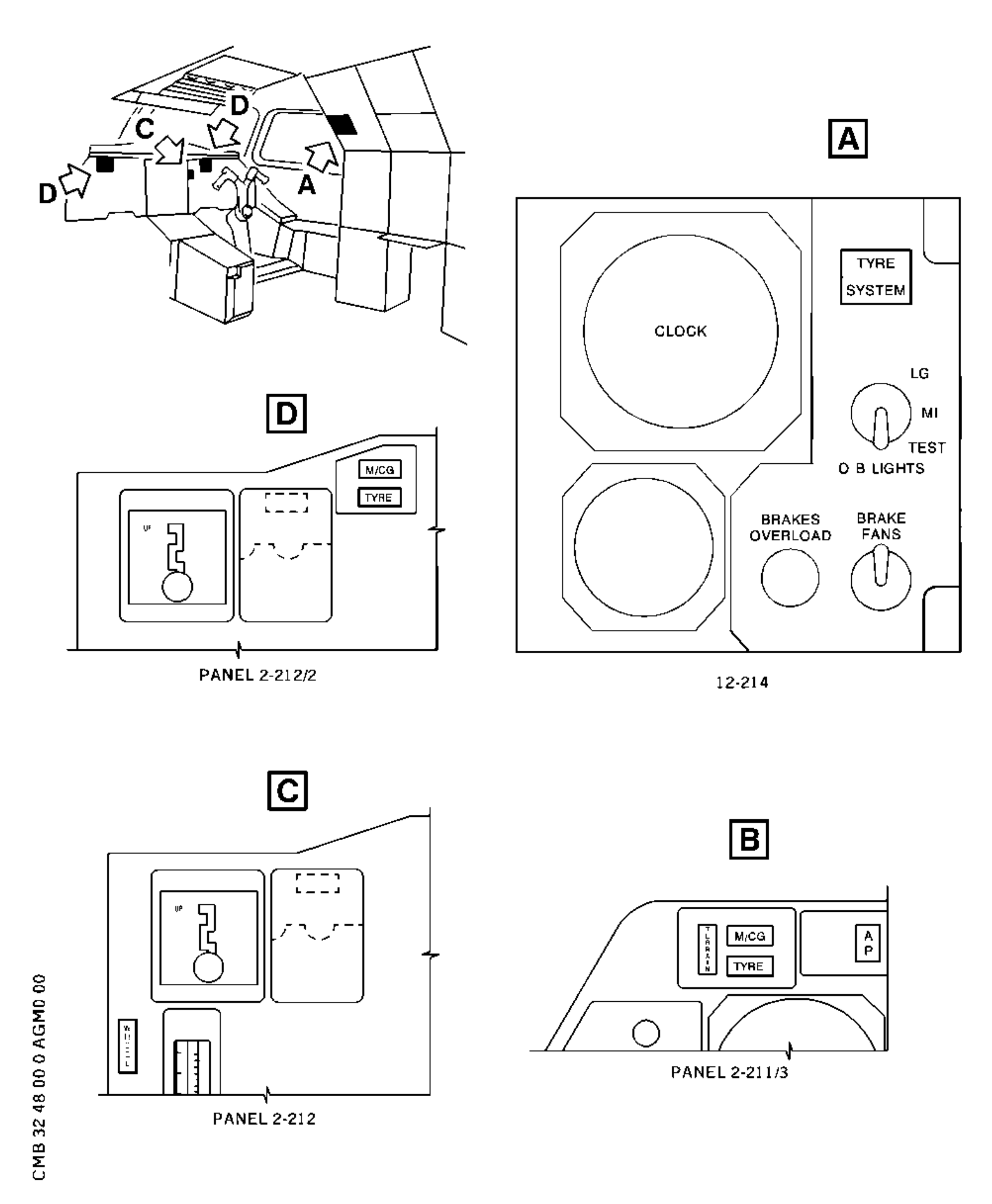
(a) On panel 12-211, place and hold D/B LIGHTS switch in TEST position : TYRE light on Captain's instrument panel comes on.

(b) On panel 5-212 place and hold D/B LIGHTS switch in TEST position ; TYRE and WHEEL lights on First Officer's instrument panel come on.

(c) On panel 12-214 place and hold D/B LIGHTS switch in TEST position, the double TYRE-SYSTEM light on Flight Engineer's panel comes on.

(2) System check via FLAT TYRE DETECTION UNIT.

The system check is performed via the FLAT TYRE DETECTION UNIT fromt panel. The test sequence is to be carried out as described in Table 1.



Flat Tyre Detection System Lights - Location
Figure 004

C. Flight Engineer's Panel

A double TYRE SYSTEM light with integral reset function is located on Flight Engineer's panel 12-214.
The TYRE light comes on red without flashing to indicate that a tyre is flat.
The yellow SYSTEM light comes on to indicate system failure.
Both lights on simultaneously indicate that a cable loom has ruptured. The system can be reset by pressing the TYRE-SYSTEM light.
The TYRE SYSTEM light can be dimmed and tested via the D/B LIGHTS switch on panel 12-214.

Before SB 32-087 for A/C 001-007

6. System Operation (Ref. Fig. 002)

A. During Take-Off or Landing

(1) Flat tyre.

(a) Indicating.

In the event of a flat tyre, twist occurs in the corresponding half bogie beam and is measured by the detection system.
The flat tyre detection signal is applied to the detection unit which causes the following lights to come on:

- TYRE light on Captain's instrument panel
- TYRE and WHEEL lights on First Officer's instrument panel
- TYRE light on Flight Engineer's panel
- TYRE light and flat tyre location light, LG or RG, on FLAT TYRE DETECTION UNIT.

NOTE: If the aircraft speed is below 10 Kts, the nose wheel steering angle greater than 3° and no throttle control lever in full thrust position, the TYRE, WHEEL and flat tyre location lights do not come on.

(b) Flight crew action.

b1) During take-off.

- TYRE and WHEEL lights on Captain's and First Officer's instrument panels come on : landing gear retraction prohibited
- TYRE light on Flight Engineer's panel comes on : RESET prohibited
- WHEEL light on First Officer's instrument panel comes on, TYRE light remains off : procedure as for brake overheat.

b2) During landing

- TYRE and WHEEL lights on Captain's and First Officer's instrument panels come on : no action
- TYRE light on Flight Engineer's panel comes on : reset authorized.

b3) At the ramp.

- TYRE and WHEEL lights come on : reset authorized.

(2) Flat tyre detection system failure.

(a) Indicating.

In the event of supply failure, rupture of the detection lines, saturation of the signal amplifier or disagreement between calculation channels, the FLAT TYRE DETECTION UNIT monitoring systems respond to the fault causing:

- SYSTEM light on Flight Engineer's panel to come on.
- SYSTEM FAILED light on FLAT TYRE DETECTION UNIT to come on.

NOTE: In the above mentioned failure configurations, the TYRE lights on the Captain's, First Officer's and Flight Engineer's panels do not come on (Tyre module inhibited).

(b) Flight crew action.

b1) At the ramp

- SYSTEM light on Flight Engineer's panel comes on : reset authorized

b2) Taxiing

- SYSTEM light on flight Engineer's panel comes on : reset authorized

b3) During take-off

- SYSTEM light on Flight Engineer's panel comes on : reset prohibited.

(3) Tyre burst.

(a) Indicating.

When a tyre bursts pieces of tread rubber may damage the cable looms on the gear concerned. Rupture of the cable loom results in current generator power supply failure and saturation of the calculation channels causing:

- TYRE light on Captain's instrument panel to come on
- TYRE and WHEEL lights on First Officer's instrument panel to come on
- double TYRE-SYSTEM light on flight Engineer's panel to come on
- TYRE, SYSTEM FAILED and flat tyre location lights LG or RG on FLAT TYRE DETECTION UNIT to come on.

(b) Flight crew action.

b1) As for a flat tyre

B. In Flight

(1) Flat tyre.

(a) Indicating.

a1) TYRE light on Captain's instrument panel comes on

a2) TYRE and WHEEL lights on First Officer's instrument panel come on

a3) TYRE light on Flight Engineer's panel comes on come on

(b) Flight crew action:

b1) On FLAT TYRE DETECTION UNIT front panel, check flat tyre location lights LG and RG.

(2) Strain gage drift.

(a) Indicating.

If drift corresponding to an overload of more than 5% occurs at one or several strain gages with the landing gear retracted, a detection signal is applied to the FLAT TYRE DETECTION UNIT causing:

- SYSTEM light on Flight Engineer's panel to come on
- SYSTEM FAILED light on FLAT TYRE DETECTION UNIT to come on

After SB 32-087 for A/C 001-007

6. System Operation (Ref. Fig. 002A)

A. During Take-Off or Landing

(1) Flat tyre.

(a) Indicating.

In the event of a flat tyre, twist occurs in the corresponding half bogie beam and is measured by the detection system.
The flat tyre detection signal is applied to the detection unit which causes:

a1) Aircraft speed between 10 and 35 Kts.

- TYRE light to flash on Captain's instrument panel.

- TYRE light to flash and WHEEL light to come on (without flashing) on First Officer's instrument panel.

- TYRE light to come on (without flashing) on Flight Engineer's panel.

- TYRE light to flash and LG or RG light to come on (without flashing) on FLAT TYRE DETECTION UNIT.

a2) Aircraft speed greater than 135 Kts.

- Inhibition of TYRE light on Captain's instrument panel.

- TYRE light to be inhibited and WHEEL light to come on (without flashing) on First Officer's instrument panel.

- TYRE light to come on (without flashing) on Flight Engineer's panel.

- TYRE light to be inhibited and LG or RG light to come on (without flashing) on FLAT TYRE DETECTION UNIT.

a3) Aircraft speed less than 10 Kts or steering angle greater than 3° and no throttle control lever in maximum thrust position.

- All TYRE and WHEEL lights and the LG and RG lights are off (TYRE module inhibited).

(b) Flight crew action.

b1) During take-off run (Va < 135 Kts)

- TYRE lights flash and WHEEL lights come on (without flashing) on Captain's and First Officer's instrument panels (perform an acceleration stop).

- TYRE light on Flight Engineer's panel comes on : RESET prohibited.

- WHEEL light on First Officer's instrument panel comes on, TYRE light remains off : procedure as for brake overheat.

b2) During landing

- TYRE and WHEEL lights on Captain's and First Officer's instrument panels comes on : no action.

- TYRE light on flight Engineer's panel comes on : reset authorized.

(b3) At the ramp

- TYRE and WHEEL lights come on : reset authorized.

(2) Flat tyre detection system failure

(a) Indicating

In the event of supply failure, rupture of the detection lines, saturation of the signal amplifier or disagreement between calculation channels, the FLAT TYRE DETECTION UNIT monitoring systems respond to the fault causing :

- SYSTEM light on Flight Engineer's panel to come on.
- SYSTEM FAILED light on FLAT TYRE DETECTION UNIT to come on.

NOTE : In the above mentioned failure configurations, the TYRE lights on the Captain's, First Officier's and Flight Engineer's panels do not come on (Tyre module inhibited).

(b) Flight crew action

(b1) At the ramp

- SYSTEM light on Flight Engineer's panel comes on : reset authorized

(b2) Taxying

- SYSTEM light on Flight Engineer's panel comes on : reset authorized.

(b3) Durint take-off

- SYSTEM light on Flight Engineer's panel comes on : reset prohibited.

(3) Tyre burst

(a) Indicating

When a tyre bursts pieces of tread rubber may damage the cable looms on the gear concerned. Rupture of a cable loom results in current generator power supply failure and saturation of the calculation channels causing :

(a1) Aircraft speed between 10 and 135 Kts :

- TYRE light to flash on Captain's instrument panel.
- TYRE light to flash and WHEEL light to come on (without flashing) on first Officer's instrument panel.
- Double TYRE-SYSTEM light to come on on Flight Engineer's panel.
- TYRE light to flash and SYSTEM FAILED and LG or RG lights to come on (without flashing) on FLAT TYRE DETECTION UNIT.

(a2) Aircraft speed greater than 135 Kts.

- Inhibition of TYRE light on Captain's instrument panel.
- TYRE light to be inhibited and WHEEL light to come on on First Officer's instrument panel.
- Double TYRE-SYSTEM light to come on on Flight Engineer's panel.
- TYRE light to be inhibited and SYSTEM FAILED and LG or RG lights to come on on FLAT TYRE DETECTION UNIT.

(b) Flight crew action

(b1) As for a flat tyre.

B. In Flight

(1) Flat tyre

(a) Indicating

(a1) TYRE light on Captain's instrument panel flashes.

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R (a2) TYRE light flashes and WHEEL light comes
R on (without flashing) on First Officer's
R instrument panel.

(a3) TYRE light on Flight Engineer's panel comes on.

(b) Flight crew action :

(b1) On FLAT TYRE DETECTION UNIT front panel, check flat tyre location lights LG and RG.

(2) Stain gage drift

(a) Indicating

If drift corresponding to an overload of more than 5% occurs at one or several strain gages with the landing gear retracted, a detection signal is applied to the FLAT TYRE DETECTION UNIT causing :

- SYSTEM light on Flight Engineer's panel to come on
- SYSTEM FAILED light on FLAT TYRE DETECTION UNIT to come on.

(b) Flight crew action

On FLAT TYRE DETECTION UNIT check strain gage drift location lights FL, RL, FR and RR.

R After SB 32-079-01 for A/C 001-007

C. System Check

(1) Lights

(a) On panel 12-211, place and hold D/B LIGHTS switch in TEST position : TYRE light on Captain's instrument panel comes on.

(b) On panel 5-212 place and hold D/B LIGHTS switch in TEST position ; TYRE and WHEEL lights on First Officer's instrument panel come on.

(c) On panel 12-214 place and hold D/B LIGHTS switch in TEST position, the double TYRE-SYSTEM light on Flight Engineer's panel comes on.

Before SB 32-087 for A/C 001-007

(2) System check via FLAT TYRE DETECTION UNIT.

(Ref. Fig. 005)

The system check is performed via the FLAT TYRE DETECTION UNIT from panel. The test sequence is to be carried out as described in Table 1.

After SB 32-087 for A/C 001-007

(2) System check via FLAT TYRE DETECTION UNIT.

(Ref. Fig. 005-A)

The system check is performed via the FLAT TYRE DETECTION UNIT from panel. The test sequence is to be carried out as described in Table 1A.

TEST SELECTOR POSITION	TYPE OF TEST	LIGHTS ON FLAT TYRE DETECTION UNIT FRONT PANEL														CAPT PANEL	F/O PANEL		FLT ENGR PANEL	
		LOCATION OF STRAIN GAGE DRIFT				GEAR CONCERNED		TYRE	SYSTEM FAILED	LIGHT EMITTING DIODES						TYRE	TYRE	WHEEL	TYRE	SYSTEM
		FL	RL	FR	RR	LG	RG			1	2	3	4	5	6					
OFF	SHUT DOWN OF TESTS																			
1	SIMULATION OF DRIFT AT THE 4 STRAIN GAGES WITH : - Va > 10 Kts - 1 THROTTLE CONTROL LEVER FULL THRUST - GEAR UPLOCKED	ON	ON	ON	ON				ON	ON										ON
2	SIMULATION OF FLAT TYRE ON RH GEAR WITH : - Va > 10 Kts						ON	ON			ON					ON	ON	ON	ON	
3	SIMULATION OF FLAT TYRE ON LH GEAR WITH : - Va < 10 Kts											ON								
4	CURRENT GENERATOR FAILURE WITH : - Va < 10 Kts								ON				ON							ON
5	STRAIN GAGE AMPLIFIER SATURATION & FLAT TYRE ON LH GEAR WITH : - Va > 10 Kts								ON					ON						ON
6	CABLE LOOM RUPTURE ON LH GEAR WITH : - Va < 10 Kts					ON		ON	ON						ON	ON	ON	ON	ON	ON
STRAIN GAGE TEST	SIMULATION OF DRIFT AT THE STRAIN GAGES WITH GEARS UPLOCKED	MIGHT COME ON							MIGHT COME ON											MIGHT COME ON

CMA 32 48 00 0 AJMO

"Table 1 - Test sequence"
Figure 005

TEST SELECTOR POSITION	TYPE OF TEST	LIGHTS ON FLAT TYRE DETECTION UNIT FRONT PANEL														CAPT PANEL	F/O PANEL		FLT ENGR PANEL	
		LOCATION OF STRAIN GAGE DRIFT				GEAR CONCERNED		TYRE	SYSTEM FAILED	LIGHT EMITTING DIODES						TYRE	TYRE	WHEEL	TYRE	SYSTEM
		FL	RL	FR	RR	LG	RG			1	2	3	4	5	6					
OFF	SHUT DOWN OF TESTS																			
1	SIMULATION OF DRIFT AT THE 4 STRAIN GAGES WITH : - Va > 10 Kts - 1 THROTTLE CONTROL LEVER FULL THRUST - GEAR UPLOCKED	ON	ON	ON	ON				ON	ON										ON
2	SIMULATION OF FLAT TYRE ON RH GEAR WITH : - Va > 10 Kts						ON	FLASH			ON					FLASH	FLASH	ON	ON	
3	SIMULATION OF FLAT TYRE ON LH GEAR WITH : - Va < 10 Kts											ON								
4	CURRENT GENERATOR FAILURE WITH : - Va < 10 Kts								ON				ON							ON
5	STRAIN GAGE AMPLIFIER SATURATION & FLAT TYRE ON LH GEAR WITH : - Va > 10 Kts								ON					ON						ON
6	CABLE LOOM RUPTURE ON LH GEAR WITH : - Va < 10 Kts					ON		FLASH	ON						ON	FLASH	FLASH	ON	ON	ON
STRAIN GAGE TEST	SIMULATION OF DRIFT AT THE STRAIN GAGES WITH GEARS UPLOCKED	MIGHT COME ON							MIGHT COME ON											MIGHT COME ON

CMA 32 48 00 0 ALMO

"Table 1A - Test sequence"
Figure 005-A

R After SB 32-079-01 For A/C 001-007,

FLAT TYRE DETECTION SYSTEM TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEARS DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.
MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISMS SAFETY DEVICES ARE IN POSITION.

1. General

The following information is intended to enable faults found in the flat tyre detection system to be quickly rectified.
The defect can be isolated with the aid of the trouble shooting procedures and traces through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs, perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.
Bracketed numbers in the procedures and charts indicate items on the component identification table [Ref. Table 101].
The table provides information including component location, required for rectification. All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated. If the fault is not rectified check the wiring in accordance with the Wiring Diagram Manual.

2. Prepare

A. Take the precautions described in the previous WARNING paragraph.

B. On First Officer's instrument panel, make certain that landing gear Normal control lever is in DOWN position.

C. On centre console, make certain that brake selector lever is in NORM position.

D. Make certain that visor is not uplocked.

E. Connect electrical ground power unit and energise the aircraft electrical network (Ref. 24-41-00, Servicing).

F. Connect hydraulic ground power unit to Green hydraulic system (Ref. 29-11-00, Servicing).

G. Make certain that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
UC POSN IND		G 51	N16
RB WHEEL BRAKES TEST IND & SUP		G9001	S15
WHEEL BRAKE "A" CONT O/LOAD IND		G 131	S16
WHEELS 5 & 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
WHEELS 1 & 4 A/SKID & ADAPT AMPS SUP		G 188	G15
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RU UC WEIGHT SW & "B" SYS SUP		G 294	B 9
NOSE UC W/SW "B" SUP		G 296	D 8
WHEEL BRAKE "B" SYS CONT		G 132	D 9
WHEELS 2 & 3 A/SKID & ADAPT AMPS	4-213	G 187	A10
WHEELS 1 & 4 A/SKID & ADAPT AMPS		G 186	F10
WHEELS O/HEAT DETECT SUP	13-215	G 334	C 8
NOSE WHEEL STEERING CONT		G 91	D 8

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	TYRE DEFLATION DETECTION SYS SUP	14-215	G 431	C 5
	UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
	UC SELECTOR RAISE CONT		G 2	A 7
	UC LOWER DOORS OPEN SUP		G 3	A 8
	UC SELECTOR LOWER CONT		G 4	A 9
	NOSE WHEEL STEERING IND		G 92	B 6
RB	WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
	PLTS LT TEST SUP		L1001	E14
	TYRE DEFLECTION DETECTION SYSTEM IND		G 430	E 9
	WHEEL O/HEAT IND		G 335	F 7
	SYS 1 GRD PRESSN CONT		H1157	E 3
	NOSE WHEEL STEERING SUP	15-216	G 93	A18
	3 CM STN LT TEST SUP 1		L1003	C12
	ROOF PANEL LT TEST SUP		L1002	D13

H. Start up equipment bay cooling systems (Ref. 21-21-00, Servicing).

I. In RH electronics rack, remove panel 216 ES to gain access to shelf 5-216.

3. Trouble Shooting

A. Aircraft on Ground

```
*****************************************************
*On Captain's side console 12-211,place and hold D/B*
*LIGHT (LO-HI-TEST) in TEST position ; on Captain's *
*instrument panel TYRE light comes on               *
*Release switch, TYRE light goes off.            IF *
*****************************************************
   ||     |     ------------------------------------------------
   OK     NOT OK--|Captain's TYRE light [1]comes on but dimmed. |
   ||     |       |Ref. Chart 101                               |
   ||     |     ------------------------------------------------
   ||     |     ------------------------------------------------
   OK     NOT OK--|Captain's TYRE light [1]does not come on.    |
   ||     |       |Ref. Chart 102                               |
   ||           ------------------------------------------------
*****************************************************
*On First Officer's side console 5-212, place and   *
*hold D/B LIGHT (LO-HI-TEST) in TEST position ; on  *
*First Officer's instrument panel TYRE and WHEEL    *
*lights come on                                     *
*                                                   *
*Release switch, TYRE and WHEEL lights go off.   IF *
*****************************************************
   ||     |     ------------------------------------------------
   OK     NOT OK  |First Officer's TYRE light [2] or WHEEL light [3]|
   ||     |       |comes on but dimmed. Ref. Chart 101          |
   ||     |     ------------------------------------------------
   ||     |     ------------------------------------------------
   OK     NOT OK  |First Officer's TYRE light [2] does not come on. |
   ||     |       |Ref. Chart 102                               |
   ||     |     ------------------------------------------------
   ||     |     ------------------------------------------------
   OK     NOT OK  |WHEEL light [3] does not come on. Ref. Chart 103 |
   ||           ================================================
*****************************************************
*On Flight Engineer's panel 12-214, place and hold  *
*D/B LIGHT [LO-HI-TEST] in TEST position, TYRE-     *
*SYSTEM double light comes on.                      *
*Release switch, TYRE-SYSTEM double light goes off. *
*                                                IF *
*****************************************************
   ||     |
   ||     |
```

```
    ||      |          -------------------------------------------------
    OK      NOT OK    |TYRE-SYSTEM double light [4] comes on but dimmed.|
    ||                |Ref. Chart 101                                   |
    ||                 -------------------------------------------------
    ||                 -------------------------------------------------
    OK      NOT OK    |Half of the TYRE-SYSTEM double light [4] does not|
    ||                |come on. Ref. Chart 104                          |
    ||                 -------------------------------------------------
*****************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT front  *
*panel :                                            *
*-Place test selector in position 1                 *
*-Place and hold TEST switch in TEST position.      *
R  *Check that after five second delay :               *
*-On FLAT TYRE DETECTION UNIT FL, RL, FR, RR, SYSTEM*
* FAILED and position 1 LED are on                  *
*-On Flight Engineer's panel 12-214, lower half     *
* (SYSTEM) of the TYRE-SYSTEM double light is on.   *
*                                                IF *
*****************************************************
    ||      |          -------------------------------------------------
    OK      NOT OK--|On FLAT TYRE DETECTION UNIT [5] the above        |
    ||      |         |mentioned lights are off.                        |
    ||      |         |Ref. Chart 105                                   |
    ||      |          -------------------------------------------------
    ||      |          -------------------------------------------------
    OK      NOT OK--|On Flight Engineer's panel 12-214, lower half    |
    ||                |[SYSTEM] of the TYRE-SYSTEM light [4] is off     |
    ||                |Ref. Chart 106                                   |
    ||                 -------------------------------------------------
*****************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT front  *
*panel :                                            *
*-Release TEST switch and press RESET pushbutton    *
*-Place test selector in position 2                 *
*-Place and hold TEST switch in TEST position       *
*Check that :                                       *
*-On FLAT TYRE DETECTION UNIT, RG, TYRE and position*
* 2 LED are on                                      *
*-On Flight Engineer's panel 12-214, upper half     *
* [TYRE] of the TYRE-SYSTEM double light is on      *
*-On Captain's panel 2-211, TYRE light is on        *
*-On First Officer's panel 2-212, TYRE and WHEEL    *
* lights are on                                     *
*****************************************************
    ||      |
    ||      |
```

```
||       |        -----------------------------------------------
||       |        |On FLAT TYRE DETECTION UNIT [5] the above     |
OK       NOT OK--|mentioned lights are off                       |
||       |        |Ref. Chart 105                                |
||       |        -----------------------------------------------
||       |        -----------------------------------------------
||       |        |On First Officer's panel 2-212 WHEEL light [3]|
||       |        |and on Flight Engineer's panel 12-214 upper half|
OK       NOT OK   |[TYRE] of the TYRE-SYSTEM double light [4] are|
||       |        |not on                                        |
||       |        |Trip circuit breakers [6] and [7]             |
||       |        |On shelf 5-216 replace FLAT TYRE DETECTION UNIT|
||       |        |[5]                                           |
||       |        -----------------------------------------------
||       |        -----------------------------------------------
||       |        |On First Officer's panel 2-212 WHEEL light [3] is|
||       |        |off. On Flight Engineer's panel upper half [TYRE]|
OK       NOT OK--|of the TYRE-SYSTEM double light is on          |
||       |        |On the Flight Engineer's panel remove panel 12 |
||       |        |214 and replace diode G437 [8].               |
||       |        -----------------------------------------------
||       |        -----------------------------------------------
||       |        |On First Officer's panel 2-212 WHEEL Light [3] is|
||       |        |on.                                           |
||       |        |On Flight Engineer's panel upper half [TYRE] of|
OK       NOT OK--|the TYRE-SYSTEM double light is off.           |
||       |        |On Flight Engineer's panel, remove panel 12-214|
||       |        |and replace dimming module [9]                |
||       |        -----------------------------------------------
||       |        -----------------------------------------------
||       |        |Captain's TYRE Light and First Officer's TYRE |
OK       NOT OK--|light are off.                                 |
||       |        |On shelf 5-216, replace FLAT TYRE DETECTION UNIT|
||       |        |[5]                                           |
||       |        -----------------------------------------------
||       |        -----------------------------------------------
||       |        |Captain's TYRE Light [1] on and First Officer's|
OK       NOT OK--|TYRE Light [2] off.                            |
||       |        |On First Officer's panel 2-212, replace First |
||       |        |Officer's TYRE light [2]                      |
||       |        -----------------------------------------------
||       |        -----------------------------------------------
||       |        |Captain's TYRE Light [1] off and First Officer's|
||       |        |TYRE Light [2] on.                            |
OK       NOT OK--|On Captain's panel 2-211, replace Captain's TYRE|
||       |        |light module [1].                             |
||                -----------------------------------------------
||
```

```
    ||
    ||
    ||
***************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT front *
*panel.                                            *
*-Release TEST switch and press RESET pushbutton   *
*-Place test selector in position 3                *
*-Place and hold TEST switch in TEST position      *
*Check that :                                      *
*-On FLAT TYRE DETECTION UNIT only position 3      *
* LED is on                                     IF *
***************************************************
    ||     |      ---------------------------------------------
    OK     NOT OK--|On FLAT TYRE DETECTION UNIT [5] LED        |
    ||             |3 is off                                   |
    ||             |Ref. Chart 105                             |
    ||            ---------------------------------------------
***************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT front *
*panel                                             *
*-Release TEST switch and press RESET pushbutton   *
*-Place test selector in position 4                *
*Check that :                                      *
*-On FLAT TYRE DETECTION UNIT, SYSTEM-FAILED light *
* and position 4 LED are on                        *
*-On Flight Engineer's panel 12-214 lower half     *
* (SYSTEM) of the TYRE-SYSTEM double light is on- IF*
***************************************************
    ||     |      ---------------------------------------------
    OK     NOT OK--|On FLAT TYRE DETECTION UNIT [5] the above  |
    ||     |       |mentioned lights are off                   |
    ||     |       |Ref. Chart 105                             |
    ||     |      ---------------------------------------------
    ||     |      ---------------------------------------------
    OK     NOT OK--|On Flight Engineer's panel 12-214 lower half|
    ||             |[SYSTEM] of the TYRE-SYSTEM double light [4]|
    ||             |is off. Ref. Chart 106                      |
    ||            ---------------------------------------------
    ||
    ||
    ||
    ||
    ||
    ||
    ||
    ||
    ||
```

```
   ||
******************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT front   *
*panel :                                             *
*-Release TEST switch and press RESET pushbutton     *
*-Place test selector in position 5                  *
*Check that :                                        *
*-On FLAT TYRE DETECTION UNIT, SYSTEM FAILED light   *
* and position 5 LED are on                          *
*-On Flight Engineer's panel 12-214 lower half       *
* [SYSTEM] of the TYRE-SYSTEM double light is on. IF *
******************************************************
   ||     |       --------------------------------------------------
   ||     |      |On FLAT TYRE DETECTION UNIT [5] the above         |
   OK     NOT OK--|mentioned lights are off.                         |
   ||     |      |Ref. Chart 105                                    |
   ||     |       --------------------------------------------------
   ||     |       --------------------------------------------------
   ||     |      |On Flight Engineer's panel 12-214, lower half     |
   OK     NOT OK--|[SYSTEM] of the TYRE-SYSTEM double light [4] is   |
   ||            |off. Ref. Chart 106                               |
   ||             --------------------------------------------------
******************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT front   *
*panel :                                             *
*-Release TEST switch and press RESET pushbutton     *
*-Place test selector in position 6                  *
*-Place and hold test switch in TEST position        *
*Check that :                                        *
*-On FLAT TYRE DETECTION UNIT, LG, TYRE, SYSTEM      *
* FAILED lights and position 6 LED are on.           *
*-On Captain's panel 2-211 TYRE light is on          *
*-On First Officer's panel 2-212 TYRE and WHEEL      *
* lights are on.                                     *
*-On Flight Engineer's panel 12-214 TYRE-SYSTEM      *
* double light is on.                          IF    *
******************************************************
   ||     |
   ||     |
   ||     |
```

```
 ||      |
 ||      |          -------------------------------------------------
 ||      |          |On FLAT TYRE DETECTION UNIT [5] the above       |
 OK      NOT OK--|mentioned lights are off.                     |
 ||      |          |Ref. Chart 105                                  |
 ||      |          -------------------------------------------------
 ||      |          -------------------------------------------------
 ||      |          |On First Officer's panel 2-212 WHEEL light [3] is|
 OK      NOT OK--|off. On Flight Engineer's panel 12-214 upper half|
 ||      |          |(TYRE) of the TYRE-SYSTEM double light [4] is off|
 ||      |          |Ref. result of test 2                           |
 ||      |          -------------------------------------------------
 ||      |          -------------------------------------------------
 ||      |          |On First Officer's panel 2-212 WHEEL light [3] is|
 OK      NOT OK--|on. On Flight Engineer's panel upper half (TYRE) |
 ||      |          |of the TYRE-SYSTEM double light [4] is on       |
 ||      |          |Ref. result of test 2                           |
 ||      |          -------------------------------------------------
 ||      |          -------------------------------------------------
 ||      |          |On First Officer's panel 2-212 WHEEL light [3] is|
 OK      NOT OK--|off. On Flight Engineer's panel upper half (TYRE)|
 ||      |          |of the TYRE-SYSTEM double light [4] is off      |
 ||      |          |Ref. result of test 2                           |
 ||      |          -------------------------------------------------
 ||      |          -------------------------------------------------
 ||      |          |Captain's TYRE light [1] and First Officer's TYRE|
 OK      NOT OK--|light [2] are off                              |
 ||      |          |Ref. result of test 2                           |
 ||      |          -------------------------------------------------
 ||      |          -------------------------------------------------
 ||      |          |Captain's TYRE light [1] and First Officer's TYRE|
 OK      NOT OK--|light [2] off                                  |
 ||      |          |Ref. result of test 2                           |
 ||      |          -------------------------------------------------
 ||      |          -------------------------------------------------
 ||      |          |Lower half (SYSTEM) of the TYRE-SYSTEM double    |
 OK      NOT OK--|light [4] off                                  |
 ||      |          |Ref. Chart 106                                  |
 ||      |          -------------------------------------------------
 ||
 ||
```

```
       ||
   ***************************************************
   *On shelf 5-216, on FLAT TYRE DETECTION UNIT front   *
   *panel :                                             *
   *-Release TEST switch and press RESET pushbutton     *
   *-Return test selector to OFF                        *
   *On centre console 9-211 make certain that :         *
   *-throttle control levers are in centre position     *
   *-nose gear wheels are centred                       *
   *-Disconnect a strain gage on one main gear bogie    *
   * beam and check that :                              *
   *-On Flight Engineer's panel 12-214 lower half       *
   * (SYSTEM) of the TYRE-SYSTEM double light is on     *
R  *-On FLAT TYRE DETECTION UNIT, SYSTEM FAILED         *
R  * light is on                                   IF   *
   ***************************************************
       ||    |       ----------------------------------------------------
       ||    |      |On Flight Engineer's panel 12-214 TYRE-SYSTEM      |
       OK    NOT OK==|double light [4] is off                           |
       ||    |      |Ref. Chart 106                                     |
       ||    |       ----------------------------------------------------
       ||    |       ----------------------------------------------------
       ||    |      |On FLAT TYRE DETECTION UNIT [5] the above          |
R      OK    NOT OK--|mentioned light is off                            |
       ||           |Ref. Chart 105                                     |
       ||            ----------------------------------------------------
   ***************************************************
   *On First Officer's panel 2-212, on ANTI SKID test   *
   *indicator place and hold TEST1/TEST2 switch in TEST *
   *1 position and check that :                         *
   *-On Captain's panel 2-211 TYRE light comes on       *
   *-On First Officer's panel 2-212 TYRE and WHEEL      *
   * lights come on                                     *
   *-On Flight Engineer's panel 12-214 TYRE-SYSTEM      *
   * double light comes on                              *
   *-On FLAT TYRE DETECTION UNIT LG or RG, SYSTEM       *
   * FAILED, TYRE lights are on.                   IF   *
   ***************************************************
       ||     |
       ||     |
       ||     |
```

```
     ||     |
     ||     |        ---------------------------------------------------
     ||     |       |On FLAT TYRE DETECTION UNIT [5] the above          |
     OK    NOT OK---|mentioned lights do not come on.                   |
     ||             |Ref. Chart 107                                     |
     ||              ---------------------------------------------------
****************************************************
*Turn nose wheels to right or left.                *
*On Flight Engineer's 12-214 press TYRE-SYSTEM     *
*double light and check that.                      *
*-On Captain's panel 2-211 TYRE light is off       *
*-On First Officer's 2-212 TYRE and WHEEL lights are *
* off                                              *
*-On Flight Engineer's panel 12-214 lower half     *
* a (SYSTEM) of the TYRE-SYSTEM light is on. Upper *
* half (TYRE) is off.                              *
*-On shelf 5-216, on FLAT TYRE DETECTION UNIT,     *
R * SYSTEM FAILED, light is on                  IF *
****************************************************
     ||    |         ----------------------------------------------------
     ||    |        |TYRE lights [1], [2], [4] and WHEEL light [3]       |
     OK   NOT OK---|remain on after reset by pressing TYRE SYSTEM       |
     ||             |double light. Ref. Chart 108                        |
     ||              ----------------------------------------------------
****************************************************
*On centre console 9-211 place one of the four     *
*throttle control levers in MAX THRUST position and *
R *check that after five second delay :            *
*-On Captain's panel 2-211 TYRE light is on        *
*-On First Officer's panel 2-212 TYRE and WHEEL    *
* lights are on                                    *
*-On Flight Engineer's panel 12-214 TYRE SYSTEM    *
* double light is on                               *
*-On shelf 5-216, on FLAT TYRE DETECTION UNIT,     *
* SYSTEM FAILED, LG or RG, TYRE lights are on   IF *
****************************************************
     ||     |        ----------------------------------------------------
     OK    NOT OK--|TYRE lights [1], [2], [4] and WHEEL light [3] are|
     ||             |off. Ref. Chart 109                                 |
     ||              ----------------------------------------------------
     ||
     ||
     ||
     ||
     ||
     ||
     ||
```

```
       ||
   *****************************************************
   *On Flight Engineer's panel 12- 214 press on TYRE    *
   *SYSTEM double light and check that :               *
R  *-On Captain's panel 2-211 TYRE light goes off then  *
R  * comes on again after five seconds                 *
   *-On First Officer's panel 2-212 TYRE and WHEEL      *
R  * lights go off then come on again after five seconds*
R  *-On Flight Engineer's panel 12-214, TYRE half of    *
R  * TYRE-SYSTEM double light goes off then comes on    *
R  * again after five seconds; both halves on.          *
R  *-On shelf 5-216, on FLAT TYRE DETECTION UNIT,       *
R  * SYSTEM FAILED light is on, LG or RG and            *
R  * TYRE lights go off then come on again after five   *
R  * seconds                                    IF      *
   *****************************************************
       ||    |        ---------------------------------------------------
       ||    |        |On FLAT TYRE DETECTION UNIT and flight compart-   |
R      OK   NOT OK---|ment panels the above mentioned lights do not     |
R      ||             |comply with time delay.                           |
       ||             |On shelf 5-216, replace FLAT TYRE DETECTION UNIT |
       ||             |[5]                                               |
       ||             ---------------------------------------------------
   *****************************************************
   *Return nose wheels to centered position and check   *
   *that :                                              *
   *-On Captain's panel 2-211 TYRE light remains on     *
   *-On First Officer's panel 2-212 TYRE light and      *
   * WHEEL light remain on                              *
   *-On Flight Engineer's panel 12-214 TYRE SYSTEM      *
   * double light remains on                            *
   *-On shelf 5-216, on FLAT TYRE DETECTION UNIT LG or  *
   * RG, TYRE, SYSTEM FAILED lights are on              *
   *****************************************************
       ||    |        ---------------------------------------------------
       ||    |        |On FLAT TYRE DETECTION UNIT and flight compart-   |
       ||    |        |ment panels the above mentioned lights are off.   |
       OK   NOT OK---|On shelf 5-216, replace FLAT TYRE DETECTION UNIT |
       ||             |[5]                                               |
       ||             ---------------------------------------------------
       ||
       ||
```

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```
    ||
*****************************************************
*On First Officer's panel 2-211, on ANTI SKID test  *
*indicator release TEST1/TEST2 switch and check that:*
*-On Captain's panel 2-211 TYRE light remains on    *
*-On First Officer's panel 2-212 TYRE light and     *
* WHEEL light remain on                             *
*-On Flight Engineer's panel 12-214 TYRE-SYSTEM     *
* double light remains on                           *
*-On shelf 5-216, on FLAT TYRE DETECTION UNIT, LG or *
* RG, TYRE, SYSTEM FAILED lights are on.      IF    *
*****************************************************
    ||    |       --------------------------------------------------
    ||    |      |On FLAT TYRE DETECTION UNIT and flight compart-  |
    OK    NOT OK---|ment panels the above mentioned lights are off.  |
    ||           |On shelf 5-216, replace FLAT TYRE DETECTION UNIT |
    ||           |[5]                                              |
    ||            --------------------------------------------------
*****************************************************
*On Flight Engineer's panel 12-214, press TYRE-     *
*SYSTEM double light and check that :               *
*-On Captain's panel 2-211 TYRE light is no longer  *
* on                                                *
*-On Flight Engineer's panel 12-214 only lower half *
* [SYSTEM] of the TYRE-SYSTEM double light is on    *
*-On shelf 5-216, on FLAT TYRE DETECTION UNIT,      *
R * SYSTEM FAILED, light only is on            IF    *
*****************************************************
    ||    |       --------------------------------------------------
    ||    |      |On FLAT TYRE DETECTION UNIT and flight compart-  |
    ||    |      |ment panels the above mentioned lights are on.   |
    OK    NOT OK---|On shelf 5-216, replace FLAT TYRE DETECTION UNIT |
    ||           |[5]                                              |
    ||            --------------------------------------------------
    ||
    ||
```

```
       ||
   ****************************************************
   *Connect strain gage on main gear bogie beam and   *
   *check that :                                      *
   *-On Flight Engineer's panel 12-214 lower half     *
   * (SYSTEM) of the TYRE-SYSTEM double light remains *
   * on                                               *
R  *-On shelf 5-216, on FLAT TYRE DETECTION UNIT,     *
R  * SYSTEM FAILED light remains on                IF *
   ****************************************************
       ||    |        ----------------------------------------------------
       ||    |        |The above mentioned lights are off.               |
       OK    NOT OK---|On shelf 5-216, replace FLAT TYRE DETECTION UNIT  |
       ||             |[5]                                               |
       ||             ----------------------------------------------------
   ****************************************************
   *On Flight Engineer's panel 12-214 press TYRE-SYSTEM*
   *double light and check that :                     *
   *-On Flight Engineer's panel 12-214 TYRE SYSTEM    *
   * double light is no longer on                     *
   *-On shelf 5-216, on FLAT TYRE DETECTION UNIT no   *
   * light is on                                   IF *
   ****************************************************
       ||    |        ----------------------------------------------------
       ||    |        |Some lights are still on.                         |
       OK    NOT OK---|On shelf 5-216, replace FLAT TYRE DETECTION UNIT  |
       ||             |[5]                                               |
       ||             ----------------------------------------------------
   ****************************************************
   *On centre console 9-211, return the 4 throttle    *
   *control levers to normal position.                *
   *Flat tyre detection system is serviceable.        *
   ****************************************************
```


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B. Aircraft on Jacks

(1) Perform the operations described in Prepare paragraphs 2.A. to 2.C.

(2) Jack up aircraft [Ref. 07-11-00]

(3) Perform the operations described in Prepare paragraphs 2.D. to 2.I.

(4) Repeat trouble-shooting procedure described in paragraph 3.A.

```
*****************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT :      *
*-Place test selector in STRAIN GAGE TEST position  *
*-Place and hold test switch in TEST position       *
*Check that :                                       *
*-On Flight Engineer's panel 12-214, lower half     *
* (SYSTEM) of the TYRE-SYSTEM double light is no    *
* longer on                                         *
*-On shelf 5-216, on FLAT TYRE DETECTION UNIT,      *
* SYSTEM FAILED light is on                      IF *
*****************************************************
    ||    |       --------------------------------------------------
    OK    NOT OK---|The above mentioned lights are off              |
    ||             |Ref. Chart 110                                  |
    ||             --------------------------------------------------
*****************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT        *
*-Release TEST switch and press RESET pushbutton    *
*Check that :                                       *
*-On Flight Engineer's panel 12-214 lower half      *
* (SYSTEM) of the TYRE-SYSTEM double light is off   *
*-On FLAT TYRE DETECTION UNIT, SYSTEM FAILED is off *
*                                                IF *
*****************************************************
    ||    |       --------------------------------------------------
    ||    |        |The above mentioned lights are still on.        |
    OK    NOT OK   |On shelf 5-216 replace FLAT TYRE DETECTION      |
    ||             |UNIT [5]                                        |
    ||             --------------------------------------------------
    ||
    ||
    ||
    ||
    ||
```

```
   ||
*****************************************************
*On shelf 5-216, on FLAT TYRE DETECTION UNIT, return*
*test selector to OFF position                      *
*Perform a landing gear retraction as per Chapter   *
*32-31-00, Adjustment/Test and check that :         *
*-On Flight Engineer's panel 12-214 TYRE-SYSTEM     *
* light is off                                      *
*-On shelf 5-216, on FLAT TYRE DETECTION UNIT no    *
* light is on                                    IF *
*****************************************************
   ||    |        ----------------------------------------------------
   ||    |       |Above mentioned lights are on                       |
   OK   NOT OK---|On shelf 5-216, replace FLAT TYRE DETECTION UNIT    |
   ||            |[5]                                                 |
   ||             ----------------------------------------------------
*****************************************************
*Perform a landing gear extension as per Chapter 32-*
*31-00, Adjustment/Test and check that :            *
*-On Flight Engineer's panel 12-214 TYRE-SYSTEM     *
* double light is off.                              *
*-On shelf 5-216, on FLAT TYRE DETECTION UNIT no    *
* light is on.                                   IF *
*****************************************************
   ||    |        ----------------------------------------------------
   ||    |       |Above mentioned lights are on.                      |
   OK   NOT OK---|On shelf 5-216, replace FLAT TYRE DETECTION UNIT    |
   ||            |[5]                                                 |
   ||             ----------------------------------------------------
*****************************************************
*Flat tyre detection system is serviceable.         *
*****************************************************
```

[5] Restore aircraft to normal operating condition.

```
**************************************
*TYRE LIGHT [1] OR [2] OR WHEEL LIGHT*
*[3] OR TYRE-SYSTEM DOUBLE LIGHT [4] *
*COMES ON BUT DIMMED                 *
**************************************
```

```
-------------------------------------------
|On light concerned replace lamp.         |
|Ref. 33-14-00, Removal/Installation      |
-------------------------------------------
                     |
                     |
                  NOT OK
                     |
                     |
-------------------------------------------
|Replace faulty light module.             |
|Ref. 33-00-00, Removal/Installation      |
-------------------------------------------
```

Chart 101

```
************************************  -----------------------------
*CAPTAIN'S TYRE LIGHT [1] OR FIRST  * |GROUND EQUIPMENT REQUIRED   |
*OFFICER'S TYRE LIGHT [2] DOES NOT  * |----------------------------|
*COME ON.                           * |DESCRIPTION      | PART No.|
************************************  -----------------------------
                                      |MULTIMETER       |         |
                                      -----------------------------
```

```
              ------------------------------------------
              |On panel 15-215 check for 28VDC at circuit|
              |breaker [6]. 28VDC                        |
              ------------------------------------------
                   |                            |
                  YES                           NO
                   |                            |
---------------------------------   ---------------------------------
|Trip circuit breaker [6]       |   |Replace circuit breaker (6)   |
|On panel 2-211 or 2-212 replace|   ---------------------------------
|light [1] or [2]               |
---------------------------------
                   |
                 NOT OK
                   |
---------------------------------
|Check wiring. Ref. WDM 32-48-11 |
---------------------------------
```

Chart 102

WHEEL LIGHT [3] DOES NOT COME ON

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	

On panel 15-215 check for 28VDC at circuit breaker [10]. 28VDC

YES:

Trip circuit breaker [10]
On First Officer's panel 2-212
replace light [3]

NOT OK:

Check wiring. Ref. WDM 32-48-11

NO:

Replace circuit breaker [10]

Chart 103

```
*************************************
*ONE HALF OF THE TYRE-SYSTEM [4]    *
*DOUBLE LIGHT DOES NOT COME ON      *
*************************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	

```
 ------------------------------------------------------------------
 |One half of the TYRE-SYSTEM double light does not come on      |
 ------------------------------------------------------------------
              |                                   |
         TYRE light                          SYSTEM light
              |                                   |
------------------------------------  ------------------------------
|On panel 15-216, check for 28VDC|   |TRIP circuit breaker (6)    |
|at circuit breaker [11] 28VDC   |   |Remove Flight Engineer's panel|
------------------------------------  |12-214 and replace dimming  |
  |                   |               |module [12]                 |
 YES                  NO              ------------------------------
  |      -----------------------------            |
  |      |Replace circuit breaker    |            |
  |      |[11]                       |            |
  |      -----------------------------            |
  |                                               |
----------------------------                   NOT OK
|Trip circuit breaker [6]  |                      |
|Remove Flight Engineer's  |                      |
|panel 12-214 and replace  |                      |
|dimming module [9]        |                      |
----------------------------                      |
                  |                               |
               NOT OK                             |
                  |                               |
        -----------------------------------------------------
        |Check wiring. Ref. WDM 32-48-11                    |
        -----------------------------------------------------
```

Chart 104

ON FLAT TYRE DETECTION UNIT [5] THE ABOVE MENTIONED LIGHTS ARE OFF

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	

Check for 115VAC at circuit breaker [7]. 115VAC

YES

Trip circuit breakers [6] and [7] On shelf 5-216 replace FLAT TYRE DETECTION UNIT [5]

NO

Replace circuit breaker [7]

Chart 105

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	

ON FLIGHT ENGINEER'S PANEL 12-214, LOWER HALF [SYSTEM] OF THE TYRE-SYSTEM LIGHT [4] IS OFF

Remove Flight Engineer's panel 12-214
On connector U-2222A check for 28VDC between terminals n and r. 28VDC

YES:

Trip circuit breaker [6]
Remove panel 12-214 and replace dimming module [12]

NO:

Trip circuit breakers [6] and [7]
On shelf 5-216 replace FLAT TYRE DETECTION UNIT [5]

Chart 106

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THE ABOVE MENTIONED LIGHTS DO NOT COME ON

On First Officer's panel 2.212, on ANTI SKID test indicator place and hold TEST1/TEST2 switch in TEST2 position and check that :
-The eight ANTI SKID lights are on.

YES

Trip circuit breakers [6] and [7]
On shelf 5-216, replace FLAT TYRE DETECTION UNIT [5]

NO

Ref. 32-43-00, Trouble-Shooting

Chart 107

Printed in England

TYRE LIGHTS [1], [2], [4] AND WHEEL LIGHT [3] REMAIN ON AFTER RESET BY PRESSING TYRE-SYSTEM DOUBLE LIGHT

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No
MULTIMETER	

With nose gear steering angle greater than 3°, on shelf 5-216, on FLAT TYRE DETECTION UNIT, press RESET pushbutton.
TYRE and WHEEL lights are off.

- YES: Check for continuity between connector G439AB terminal 57 and ground. Continuity
  - YES: Replace microswitch [13]. Ref. 32-31-94, Removal/Installation
    - NOT OK: Check wiring. Ref. WDM 32-48-11
  - NO: Trip circuit breakers [6] and [7]. On shelf 5-216, replace FLAT TYRE DETECTION UNIT [5]
- NO: On panel 12-214 press and hold TYRE-SYSTEM double light. Check for continuity between connector G439AA terminal 57 and ground
  - YES: Trip circuit breakers [6] and [7]. On shelf 5-216, replace FLAT TYRE DETECTION UNIT [5]
  - NO: Trip circuit breaker [6]. Remove Flight Engineer's panel 12-214 and replace TYRE-SYSTEM double light [4]
    - NOT OK: Check wiring. Ref. WDM 32-48-11

Chart 108

TYRE LIGHTS [1], [2], [4] AND WHEEL LIGHT [3] ARE OFF

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	

Check for continuity between connector G439 AB terminal 44 and ground.

CONTINUITY:

Ref. 21-36-00, Trouble-Shooting

NO CONTINUITY:

Trip circuit breakers [6] and [7]
On shelf 5-216, replace FLAT TYRE DETECTION UNIT [5]

Chart 109

ABOVE MENTIONED LIGHTS ARE OFF

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
2 RESISTANCE BOXES	

On shelf 5-216, on FLAT TYRE DETECTION UNIT [5] front panel, check lights FR, RR, FL, RL to locate strain gage concerned [14], [15], [16], [17]
On bogie beam, disconnect connector from the cover of the strain gage concerned and connect one resistance box between signal output terminals E-F and the other resistance box between supply terminals D-A.
On the two resistance boxes select a resistance of 350 ohms
On shelf 5-216, on FLAT TYRE DETECTION UNIT
-Press RESET pushbutton and check that :
 FR, RR, FL or RL, SYSTEM FAILED lights are off.

YES:

Disconnect resistance boxes and connect standby strain gage

NO:

Trip circuit breakers [6] and [7]
On shelf 5-216, replace FLAT TYRE DETECTION UNIT [5]

Chart 110

ITEM No AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REFER.	
					MAINT. TOPIC	WIRING DIAGRAM
[1]TYRE LIGHT		2-211-3	G 432	Flight Compartment	33-00-00 R/I	32-48-01
[2]TYRE LIGHT		2-212-2	G 433	Flight Compartment	33-00-00 R/I	32-48-01
[3]WHEEL LIGHT		2-212	G 346	Flight Compartment	33-00-00	32-48-01
[4]TYRE-SYS-TEM LIGHT		12-214	G 434	Flight Compartment	33-00-00 R/I	32-48-01
[5]FLAT TYRE DETECTION UNIT	216ES	5-216	G 439	RH Avionics Rack	32-48-11 R/I	32-48-01
[6]CIRCUIT BREAKER 28VDC	216ES	15-215	G 430	Map Ref. E-9	24-50-00 R/I	32-48-01
[7]CIRCUIT BREAKER 115VAC		14-215	G 431	Map Ref. C-5	24-50-00 R/I	32-48-01
[8]DIODE BREAKER		12-214	G 437	Flight Compartment		32-48-01
[9]DIMMING MODULE		12-214	L1621A	Flight Compartment	33-14-00 R/I	32-48-01
[10]CIRCUIT BREAKER 28VDC		15-215	L1001	Map Ref. E-14	24-50-00 R/I	33-14-04
[11]CIRCUIT BREAKER 28VDC		15-216	L1003	Map Ref. C-12	24-50-00 R/I	33-14-01
[12]DIMMING MODULE		12-214	L1621B	Flight Compartment	33-14-00 R/I	32-48-01
[13]NOSEWHEEL CENTERED MICRO SWITCH		715	G 14	On steer-ing jack	32-31-94 R/I	32-31-01

ITEM No AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REFER.	
					MAINT. TOPIC	WIRING DIAGRAM
[14]FORWARD STRAIN GAGE		743	G 441	On bogie beam, RH		32-48-01
[15]REAR STRAIN GAGE		743	G 442	On bogie beam, RH		32-48-01
[16]FORWARD STRAIN GAGE		733	G 443	On bogie beam, LH		32-48-01
[17]REAR STRAIN GAGE		733	G 444	On bogie beam, LH		32-48-01

Component Identification
Table 101

R After SB 32-079-01 For A/C 001-007,

R 1. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	

B. Prepare

(1) Aircraft on ground, gears downlocked and shock absorbers compressed.

(2) Make certain that D/B LIGHTS (LO-HI-TEST) switch is in HI position :

(a) On Captain's side console 12-211

(b) On First Offcier's side console 5-212

(c) On Flight Engineer's panel 12-214

(3) Remove panel 216ES from RH electronics rack to gain access to the front panel of FLAT TYRE DETECTION UNIT on shelf 5-216

(4) Make certain that nose wheels are centered

(5) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(6) Start up equipment bay cooling system (Ref. 21-21-00)

(7) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
TYRE DEFLATION DETECTION SYSTEM SUP	14-215	G 431	C 5
TYRE DEFLATION DETECTION SYSTEM IND	15-215	G 430	E 9
PLTS LT TEST SUP		L1001	E14
3CM STN LH LT TEST SUP 1	15-216	L1003	C12

(8) Trip, safety and tag the following circuit breakers:

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RB	WHEEL BRAKES TEST IND & SUP	1-213	G9001	S15
RB	WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6
	SYS 1 GRD PRESSN CONT		H1157	E 3

After SB 32-087 For A/C 001-007

(9) On center console 9-211, ADC control panel, make certain that:

- ADC 1 and ADC 2 selector switches are in OFF position.

After SB 32-079-01 For A/C 001-007

C. Tests

(1) Light test

(a) On Captain's side console 12-211, D/B LIGHT switch.

(a1) Place and hold switch in TEST position and check that:
- On Captain's panel 2-211, TYRE light is on

(a2) Release switch and check that:
- On Captain's panel 2-211, TYRE light goes off

(b) On First Officer's side console 5-212, D/B LIGHT switch

(b1) Place and hold switch in TEST position and check that:
- On First Officer's panel 2-212, TYRE and WHEEL lights are on

(b2) Release switch and check that:
- On First Officer's panel 2-212, TYRE and WHEEL lights are off

(c) On Flight Engineer's panel 12-214, D/B LIGHT switch:

(c1) Place and hold switch in TEST position and check that:
- On panel 12-214, TYRE-SYSTEM double light is on

(c2) Release switch and check that:
- On panel 12-214, TYRE-SYSTEM double light is
R off.

(2) System Self-Test

NOTE: The system test is performed from the FLAT TYRE DETECTION UNIT front panel on shelf 5-216.

(a) Test 1

(a1) On unit
- Place test selector in position 1
- Place and hold test switch in TEST position

(a2) Check that:
- On unit, FL, RL, FR, RR, and SYSTEM FAILED lights and position 1 LED are on
- On Flight Engineer's panel 12-214, lower half (SYSTEM) of the TYRE-SYSTEM double light is on

(a3) On Flight Engineer's panel 12-214, place D/B LIGHT switch:
- In LO position and check that the lower half (SYSTEM) of the double light is dimmed
- In HI position and make certain that the lower half (SYSTEM) of the double light returns to normal brightness.

(a4) On unit
- Release test switch
- Press and release RESET pushbutton

(a5) Check that the lights mentioned in step (a2) are off.

R Before SB 32-087 For A/C 001-007

(b) Test 2

(b1) On unit
- Place test selector in position 2
- Place and hold test switch in TEST position

(b2) Check that after five second delay :
- On unit, RG and TYRE lights and position 2 LED are on
- On Flight Engineer's panel 12-214, upper half (TYRE) of the TYRE-SYSTEM double switch is on
- On Captain's panel 2-211 TYRE light is on
- On First Officer's panel 2-212, TYRE and WHEEL lights are on.

(b3) On Captain's side console 12-211, place D/B LIGHT switch
- In LO position and check that Captain's TYRE light is dimmed
- In HI position and make certain that Captain's TYRE light returns to normal brightness

(b4) On First Officer's side console 5-212, place D/B LIGHT switch
- In LO position and check that First Officer's TYRE and WHEEL lights are dimmed
- In HI position and check that First Officer's TYRE and WHEEL lights return to normal brightness

(b5) On Flight Engineer's panel 12-214, place D/B LIGHT switch
- In LO position and check that upper half (TYRE) of the double light is dimmed
- In HI position and check that upper half (TYRE) of the double light returns to normal brightness.

(b6) On unit
- Release test switch
- Press and release RESET pushbutton

(b7) Check that lights mentioned in step (b2) are off

R After SB 32-087 For A/C 001-007

R (b) Test 2

R (b1) On unit :
R - Place test selector in position 2
R - Place and hold test switch in TEST position

R (b2) Check that :
R - On unit, RG and position 2 LED are on, and
R TYRE light flashes at a frequency of 2 Hz.
R - On Flight Engineer's panel 12-214, upper
R half (TYRE) of the TYRE-SYSTEM double
R light is on.
R - On Captain's panel 2-211, TYRE light
R flashes at a frequency of 2 Hz
R - On First Officer's panel 2-212, TYRE light
R flashes at a frequency of 2 Hz and WHEEL
R light is on.

(b3) On Captain's side console 12-211, place D/B LIGHT switch
- In LO position and check that Captain's TYRE light is dimmed
- In HI position and make certain that Captain's TYRE light returns to normal brightness

(b4) On First Officer's side console 5-212, place D/B LIGHT switch
- In LO position and check that First Officer's TYRE and WHEEL lights are dimmed
- In HI position and check that First Officer's TYRE and WHEEL lights return to normal brightness.

(b5) On Flight Engineer's panel 12-214, place D/B LIGHT switch
- In LO position and check that upper half (TYRE) of the double light is dimmed
- In HI position and check that upper half (TYRE) of the double light returns to normal brightness.

(b6) On unit
- Release test switch
- Press and release RESET pushbutton

(b7) Check that lights mentioned in step (b2) are off

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(c) Test 3

(c1) On unit
- Place test selector in position 3
- Place and hold test switch in TEST position

(c2) Check that :
- On unit, only position 3 LED is on
- On Flight Compartment panels no light is on

(c3) On unit
- Release test switch
- Press and release RESET pushbutton

(c4) On unit check that position 3 LED is off

(d) Test 4

(d1) On unit
- Place test selector in position 4
- Place and hold test switch in TEST position

(d2) Check that
- On unit SYSTEM FAILED light and position 4 LED are on
- On Flight Engineer's panel 12-214 lower half (SYSTEM) of the TYRE-SYSTEM double light is on

(d3) On unit
- Release test switch
- Press and release RESET pushbutton

(d4) Check that lights mentioned in step (d2) are off

(e) Test 5.

e1) On unit:
- Place test selector in position 5
- Place and hold test switch in TEST position

e2) Check that:
- On unit, SYSTEM FAILED light and position 5 LED are on
- On Flight Engineer's panel 12-214, lower half (SYSTEM) of the TYRE SYSTEM double light is on

e3) On unit:
- Release test switch
- Press and release RESET pushbutton

e4) Check that lights mentioned in step (e2) are off

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(f) Test 6

f1) On unit:
- Place test selector in position 6
- Place and hold test switch in TEST position

f2) Check that:
- On unit LG, TYRE and system FAILED lights and position 6 LED are on
- On Flight Engineer's panel 12-214, TYRE SYSTEM double light is on
- On First Officer's panel 2-211, TYRE light is on
- On First officer's panel 2-212, TYRE and WHEEL lights are on

f3) On unit:
- Release test switch
- Press and release RESET pushbutton

f4) Check that lights mentioned in step (f2) are off

(g) Return test selector to OFF position.

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(f) Test 6

f1) On unit:
- Place test selector in position 6
- Place and hold test switch in TEST position

f2) Check that:
- On unit, LG, SYSTEM FAILED lights and position 6 LED are on and TYRE light flashes
- On Flight Engineer's panel 12-214, TYRE SYSTEM double light is on
- On Captain's panel 2-211, TYRE light flashes
- On First Officer's panel 2-212, TYRE light flashes and WHEEL light is on

f3) On unit:
- Release test switch
- Press and release RESET pushbutton

f4) Check that lights mentioned in step (f2) are off

(g) Return test selector to OFF position.

After SB 32-079-01 For A/C 001-007

D. Close-up

(1) Remove safety clips and tags and reset circuit breakers tripped at 1.B.(8).

(2) Shut-down equipment bay cooling system (Ref. 21-21-00).

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(4) In RH electronics rack install panel 216ES.

Before SB 32-087 for A/C 001-007

2. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	-

B. Prepare

(1) Aircraft on ground, gears downlocked and shock absorbers compressed.

(2) On First Officer's instrument panel make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear Emergency control lever is in NEUTRAL position.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Start up equipment bay cooling system (Ref. 21-21-00).

(6) Make certain that the following circuit breakers are set :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	NOSE UC WEIGHT SW "A" SYS SUP.	1-213	G291	M16
R	LH UC WEIGHT SW "A" SYS SUP.		G292	M17
R	RH UC WEIGHT SW & DOWNLOCKED "A" SYS SUP		G295	M18
R	UC POSN IND.		G 51	N16
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND		G131	S16
R				
R	WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G185	A15
R	WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G188	G15
R				
R	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP.	3-213	G291	B 8
R	RH UC WEIGHT SW "B" SYS SUP		G294	B 9
R	NOSE UC W/SW "B" SUP		G296	D 8
R	WHEEL BRAKE "B" SYS CONT		G132	D 9

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RB	WHEEL BRAKES TEST IND & SUP	1-213	G9001	S15
	WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
	WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
	WHEELS O/HEAT DETECT SUP	13-215	G 334	C 8
	NOSE WHEEL STEERING CONT		G 91	D 8
	TYRE DEFLATION DETECTION SYSTEM SUP	14-215	G 431	C 5
	UC RAISE DOORS CLOSE UP	15-215	G 1	A 6
	UC SELECTOR RAISE CONT		G 2	A 7
	UC LOWER DOORS OPEN SUP		G 3	A 8
	UC SELECTOR LOWER CONT		G 4	A 9
	NOSE WHEEL STEERING IND		G 92	B 6
RB	WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
	PLTS LT TEST SUP		L1001	E14
	TYRE DEFLATION DETECTION SYSTEM IND		G 430	E 9
	WHEEL O/HEAT IND		G 335	F 7
	SYS 1 GRD PRESSN CONT		H1157	E 3
	NOSE WHEEL STEERING SUP	15-216	G 93	A18
	3CM STN LH LT TEST SUP 1		L1003	C12
	ROOF PANEL LT TEST SUP		L1002	D13

(7) In RH electronics racks remove panel 216ES to gain access to shelf 5-216.

C. Tests

(1) Light test

Repeat test described in operational test at paragraph 1.C.(1)

(2) System self-test

Repeat test described in operational test at paragraph 1.C.(2)

(3) System test

(a) On centre console 9-211 make certain that:

- Throttle control levers are in centre position

- Nose wheels are centred

(a1) On RH or LH main gear bogie beam disconnect one strain gauge and check that:
- On unit, SYSTEM FAILED light is on,
- On Flight Engineer's panel 12-214 lower half (SYSTEM) of the TYRE-SYSTEM double light is on

(b) On First Officer's Panel 2-212, on ANTI-SKID panel, place and hold TEST1/TEST2 switch in TEST 1 position and check that:

(b1) On Captain's panel 2-211, TYRE light is on

(b2) On First Officer's panel 2-212, TYRE and WHEEL lights are on

(b3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is on

(b4) On unit, LG or RG, TYRE and SYSTEM FAILED lights are on

(c) Turn nose wheels to left or right (steering angle greater than 3°)
On Flight Engineer's panel 12-214, press TYRE-SYSTEM double light and check that:

(c1) On Captain's panel 2-211, TYRE light is off

(c2) On First Officer's panel 2-212, TYRE and WHEEL lights are off

(c3) On Flight Engineer's panel 12-214, lower half (SYSTEM)
R of the TYRE-SYSTEM double light is still on

(c4) On unit, SYSTEM FAILED light only is on

(d) On centre console 9-211, place one of the four throttle control levers in MAX thrust position (power higher than 100%) and check that after five second delay:

(d1) On Captain's panel 2-211, TYRE light is on

(d2) On First Officer's panel 2-212, TYRE and WHEEL lights are on

(d3) On Flight Engineer's panel 12-214, TYRE-SYSTEM light is on

(d4) On unit, LG or RG, TYRE and SYSTEM FAILED lights are on

(e) On Flight Engineer's panel 12-214, press TYRE-SYSTEM double light and check that :

R (e1) On Captain's panel 2-211, TYRE light is
R still on.

(e2) On First Officer's panel 2-212, TYRE and
R WHEEL lights are still on.

R (e3) On Flight Engineer's panel 12-214, TYRE-
R SYSTEM double light is still on.

R (e4) On unit, SYSTEM FAILED, LG or RG and TYRE
R lights are still on.

(f) Return nose wheels to centered position and check that :

(f1) On Captain's panel 2-211, TYRE light is still on

(f2) On First Officer's panel 2-212, TYRE and WHEEL lights are still on

(f3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is still on

(f4) On unit, LG or RG, TYRE and SYSTEM FAILED lights are still on

(g) On First Officer's panel 2-212, on ANTI-SKID indicator release TEST1/TEST2 switch and check that :

(g1) On Captain's panel 2-211, TYRE light is still on

(g2) On First Officer's panel 2-212, TYRE and WHEEL lights are still on

(g3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is still on

(g4) On unit, LG or RG, TYRE and SYSTEM FAILED lights are still on

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Hydraulic Ground Power Unit	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that landing gear Emergency control lever is in NEUTRAL position

(4) Jack up aircraft (Ref. 07-11-00)

(5) Check that visor is not uplocked

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing)

(8) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G291	M16
LH UC WEIGHT SW "A" SYS SUP		G292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G295	M18
UC POSN IND		G51	N16
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G293	B 8
RH UC WEIGHT SW "B" SYS SUP		G294	B 9
NOSE UC W/SW "B" SUF		G296	D 8

R After SB 32-087 for A/C 001-007

2. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
R Electrical Ground Power Unit	
R Circuit Breaker Safety Clips	

B. Prepare

(1) Aircraft on ground, gears downlocked and shock absorbers compressed

(2) On First Officer's instrument panel make certain that landing gear Normal control lever is in NEUTRAL position.

R (3) On center console 9-211, make certain that :

R (a) Landing gear Emergency control lever is in
R NEUTRAL position.

R (b) On ADC control panel :

R (b1) ADC1 and ADC2 switches are placed in OFF
R position.

R (b2) TEST selectors are in NORM position

R (4) On captain's and First Officer's instrument panels
R make certain that on airspeed indicators, mode
R selector switch is in N (Normal) position.

R (5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

R (6) Start up equipment bay cooling system (Ref. 21-21-00)

R (7) Make certain that the following circuit breakers are set :

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R	NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
R	LH UC WEIGHT SW "A" SYS SUP			
R	RH UC WEIGHT SW & DOWNLOCKED "A" SYS SUP			
R	AUDIO WARN SYS SUP 1		W 371	M21
R	UC POSN IND		G 51	N16
R	No 2 POWER SUPPLY		W 252	N21
R	ADC 1 28V SUP		1 F74	P12
R	WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
R				
R	ADC 1 26V SUP	2-213	1 F78	A 2
R	1 ST PLT VSI SUP		1 F97	A 3
R	WHEELS 2 3 A/SKID & ADAPT AMPS SUP		G 185	A15
R	STBY 1 CG LIMITS & CG COMPN SUP		Q1361	A24
R	1 ST PLT A DC INST SUP		1 F75	B 3
R	ADC 1 115V SUP		1 F73	F 3
R	WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 188	G15
R				
R	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
R	RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
R	NOSE UC W/SW "B" SUP		G 296	D 8
R	WHEEL BRAKE "B" SYS CONT		G 132	D 9
R				
R	WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
R	FLT TEST 115 VAC SUP		X 481	B22
R	STBY 2 CG LIMITS & CG COMPN SUP		Q1357	B 2
R	WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
R				
R	AUDIO WARN SYS SUP 2	5-213	W 372	C17
R	No 1 POWER SUPPLY		W 251	D15
R	ADC 2 28V SUP		2 F74	F12
R				
R	WHEELS O/HEAT DETECT SUP	13-215	G 334	C 8
R	NOSE WHEEL STEERING CONT		G 91	D 8

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
RB	WHEEL BRAKES TEST IND & SUP	1-213	G9001	S15
	2ND PLT ADC INST SUP	13-216	2 F75	A14
	3CM ADC TEMP INST SUP		F 105	A15
	2ND PLT VSI SUP		2 F97	B13
	ADC 2 26V SUP		2 F78	F14
	ADC 2 115V SUP		2 F73	F15
	FLT TEST 26VAC SUP		X 480	B18
	TYRE DEFLATION DETECTION SYSTEM SUP	14-215	G 431	C 5
RB	WHEEL BRAKES YELL LL SHUT OFF	15-215	G 189	C 6
	PLTS LT TEST SUP		L1001	E14
	TYRE DEFLATION DETECTION SYSTEMS IND		G 430	E 9
	WHEEL O/HEAT IND		G 335	F 7
	SYS 1 GRD PRESSN CONT		H1157	E 3
	NOSE WHEEL STEERING SUP	15-216	G 93	A18
	3CM STN LH LT TEST SUP 1		L1003	C12
	ROOF PANEL LT TEST SUP		L1002	D13

(8) In RH electronics racks remove panel 216ES to gain access to shelf 5-216.

(9) Trip, safety and tag STICK SHAKER SUP circuit breaker W513 on panel 1-213, map ref. P15.

C. Tests

(1) Light test

Repeat test described in operational test at paragraph 1.C.(1)

(2) System self-test

Repeat test described in operational test at paragraph 1.C.(2)

(3) System test

NOTE : Vc > 135 Kts can be obtained by connecting pressure
R sensors simulator P/N 87209455 on the front face of ADC 1 instead of using TEST 1 position on the ADC control panel.

(a) On center console 9-211 :

- Make certain that throttle control levers are in centre position.
- Make certain that nose wheels are centered
- Place ADC 1 switch in ON position. Press and release ADC 1 warning light which must go off, then check that flags of Captain's airspeed instruments have disappeared.

(a1) On RH or LH main gear bogie beam disconnect one strain gage and check that :

- On unit, SYSTEM FAILED light is on,
- On Flight Engineer's panel 12-214 lower half (SYSTEM) of the TYRE-SYSTEM double light is on

(b) On First Officer's panel 2-212, on ANTI-SKID panel, place and hold TEST 1/TEST 2 switch in TEST 1 position and check that :

(b1) On Captain's panel 2-211, TYRE light flashes at a frequency of 2 Hz

(b2) On First Officer's panel 2-212 :

- TYRE light flashes at a frequency of 2 Hz
- WHEEL light is on

(b3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is on

(b4) On unit, LG or RG SYSTEM FAILED lights are on and TYRE light flashes at a frequency of 2 Hz.

(c) On center console 9-211, ADC control panel, place ADC 1 test selector switch in position 1, blue TEST indicator light comes on and altitude, speed, mach, temperature, angle of attach information are displayed on the corresponding instruments.
On airspeed indicator, when indicated speed is approximately 135 Kts, check that :

(c1) On Captain's instrument panel 2-211, TYRE light is off (no flashes).

(c2) On First Officer's instrument panel 2-212:

- TYRE light is off (no flashes)
- WHEEL light is still on

(c3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is on

(c4) On unit, LG or RG, SYSTEM FAILED lights are on and TYRE light is off (no flashes).

(d) On center console 9-211, on ADC control panel, place ADC 1 test selector switch in NORM position, blue TEST indicator light goes off and the instruments return to initial value.
On airspeed indicator when the speed is lower than 135 Kts, check that:

(d1) On Captain's instrument panel 2-211, TYRE light flashes at a frequency of 2 Hz.

(d2) On First Officer's instrument panel 2-212:

- TYRE light flashes at a frequency of 2 Hz
- WHEEL light is on.

(d3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is on.

(d4) On unit, LG or RG, SYSTEM FAILED lights are on and TYRE light flashes at a frequency of 2 Hz.

(d5) Press and release ADC 1 warning light to cancel the warnings.

(e) Turn nose wheels to left or right (steering angle greater than 3°)
On Flight Engineer's panel 12-214, press TYRE-SYSTEM double light and check that:

(e1) On Captain's panel 2-211, TYRE light is off (no flashes)

(e2) On First Officer's panel 2-212:

- WHEEL light is off
- TYRE light is off (no flashes)

(e3) On Flight Engineer's panel 12-214, lower half
R (SYSTEM) of the TYRE-SYSTEM double light is still on.

R (e4) On unit, SYSTEM FAILED light only is on

R (f) On centre console 9-211, place one of the four throttle control levers in MAX thrust position (power higher than 100 %) and check that after five second delay :

R (f1) On Captain's panel 2-211, TYRE Light flashes at a frequency of 2 Hz

R (f2) On First Officer's panel 2-212 :

R - WHEEL light
R - TYRE light flashes at a frequency of 2 Hz

R (f3) On Flight Engineer's panel 12-214, TYRE-SYSTEM light is on

R (f4) On unit, LF or RG, SYSTEM FAILED lights are on, TYRE light flashes at a frequency of 2 Hz.

R (g) On Flight Engineer's panel press TYRE-SYSTEM double light and check that :

R (g1) On Captain's panel 2-211, TYRE light flashes at a frequency of 2 Hz.

R (g2) On First Officer's panel 2-212 :

R - TYRE light flashes at a frequency of 2 Hz
R - WHEEL Light is on

R (g3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is on

R (g4) On unit, LG or RG, SYSTEM FAILED Lights are on TYRE light flashes at a frequency of 2 Hz.

R (h) Return nose wheels to centered position and check that :

R (h1) On Captain's panel 2-211, TYRE Light is still flashing

R (h2) On First Officer's panel 2-212; TYRE and

R - WHEEL Light is still on
R - TYRE light is still flashing

R (h3) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is still on

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(h4) On unit, LG or RG, SYSTEM FAILED lights are still on and TYRE light is still flashing.

(i) On First Officer's panel 2-212, on ANTI-SKID indicator release TEST 1/TEST 2 switch and check that :

(i1) On Captain's panel 2-11, TYRE light is still flasing.

(i2) On First Officer's panel 2-212 :

- WHEEL Light is still on
- TYRE light is still flashing

(i3) On Flight Engineer's panel 12-214, TYRE- SYSTEM double light is still on

(i4) On unit, LG or RG SYSTEM FAILED lights are still on and TYRE light is still flasing

(j) On Flight Engineer's panel 12_214, press TYRE-SYSTEM double light and check that :

(j1) On Captain's panel 2-211, TYRE light goes off (no flashes)

(j2) On First Officer's panel 2-212 :

- WHEEL light goes off
- TYRE light goes off (no flashes)

(j3) On Flight Engineer's panel 12-214, lower half (SYSTEM) of the TYRE-SYSTEM double light is on

(j4) On unit, SYSTEM FAILED light only is on

(k) On bogie beam connect strain gage disconnected at 2.C.(3) (a) (a1) and check that :

(k1) On Flight Engineer's panel 12-214, only lower half (SYSTEM) of the TYRE-SYSTEM double light is on

(k2) On unit, SYSTEM FAILED light onlu is on.

(l) On Flight Engineer's panel 12-214, press TYRE-SYSTEM double light and check that :

(l1) On Flight Engineer's panel 12-214, TYRE-SYSTEM light is off

(l2) On unit, no light is on

(m) On centre console 9-211 :

(m1) Place throttle control levers in Normal position

(m2) On ADC control panel, place ADC 2 selector switch in ON position. After 30 seconds, press and release ADC 2 warning light, the flags of First Officer's airspeed indicators have disappeared.

(n) M/CG warning test :

(n1) On the FQI control panel, rotate the ZFCG preset to move the CG from its existing value (assumed to be 53 % Co) toward the AFT boundary.

(n2) Check that when a CG readout of 53.8 (± 0.2) % Co is attained, the normal AFT boundary warnings are activated, lighting the pilot's and 3CM CG indicator warning lamps and illuminating the red M/CG captions on the Captain's and First Officer's left and right instrument panels, and a red master warning M/CG caption, accompagnied by a single-stroke gong.

(n3) Press the INHIBIT push-switch on the MWS display panel and check that the INHIBIT indicator lamps are lit.

(n4) Check that M/CG captions on the Captain's and First Officer's panels are off

(n5) Press and release the RECALL push-switch. Check that the INHIBIT lights go off and M/CG captions are on.

(n6) Rotate the ZFCG selector switch to return the % counter display to the original setting.

D. Close-up

(1) On center console 9-211, ADC control panel, place ADC 1 and ADC 2 selector switches in OFF position.

R (2) Remove safety clips and tags and reset circuit
R breakers tripped at 2.B.(9)

R (3) Shut down equipment bay cooling system (Ref. 21-21-00)

R (4) De-energize the aircraft electrical system and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

R (5) In RH electronics rack install panel 216ES.

3. System Test

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack-Lifting Capability Greater Than 81600 daN (183621 lbf)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter LH	D921485000
Balancing Device - Pyramid Adapter RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Jacking Pad - Nose	D925370000
Safety Stay	
Electrical Ground Power Unit	
Hydraulic Ground Power Unit	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, check that landing gear Emergency control lever is in NEUTRAL position

(4) Jack up aircraft (Ref. 07-11-00)

(5) Check that visor is not uplocked

(6) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) Make certain that the following circuit breakers are set:

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
	LH UC WEIGHT SW "A" SYS SUP		G 292	M17
	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
	UC POSN IND		G 51	N16
	WHEEL BRAKE "A" SYS CONT O/LOAD IND		G 131	S16
RB	WHEEL BRAKES TEST IND & SUP		G9001	S15
	WHEELS 5 8 A/SKID & ADAPT AMPS SUP	2-213	G 185	A15
	WHEELS 6 7 A/SKID & ADAPT AMPS SUP		G 188	G15
	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
	RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
	NOSE UC W/SW "B" SUP		G 296	D 8
	WHEEL BRAKE "B" SYS CONT		G 132	D 9
	WHEELS 2 3 A/SKID & ADAPT AMPS SUP	4-213	G 187	A10
	WHEELS 1 4 A/SKID & ADAPT AMPS SUP		G 186	F10
	WHEELS O/HEAT DETECT SUP	13-215	G 334	C 8
	NOSE WHEEL STEERING CONT		G 91	D 8
	TYRE DEFLATION DETECTION SYSTEM SUP	14-215	G 431	C 5
	UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
	UC SELECTOR RAISE CONT		G 2	A 7
	UC LOWER DOORS OPEN SUP		G 3	A 8
	UC SELECTOR LOWER CONT		G 4	A 9
	NOSE WHEEL STEERING IND		G 92	B 6
RB	WHEEL BRAKES YELL LL SHUT OFF		G 189	C 6
	PLTS LT TEST SUP		L1001	E14
	TYRE DEFLATION DETECTION SYSTEM IND		G 430	E 9
	WHEEL O/HEAT IND		G 335	F 7
	SYS 1 GRD PRESSN CONT		H1157	E 3
	NOSE WHEEL STEERING SUP	15-216	G 93	A18
	3CM STN LH LT TEST SUP 1		L1003	C12
	ROOF PANEL LT TEST SUP		L1002	C13

(9) Start up equipment bay cooling system (Ref. 21-21-00)

(10) In the RH electronics rack, remove panel 216ES to gain access to shelf 5-216

(11) Make certain that nose wheels are centred

(12) On centre console 9-211, check that no throttle control lever is in MAX thrust position

C. Tests

(1) Light test

Repeat operations described in operational test at paragraph 1.C.(1)

(2) System Self-Test

(a) Repeat operations described in operational test at paragraphs 1.C.(2)(a) to 1.C.(2)(f)

(b) Gage check

(b1) On shelf 5-216, on unit :

- Place test selector in STRAIN GAGE TEST position
- Place and hold test switch in TEST position

(b2) Check that

- On Flight Engineer's panel 12-214, lower half (SYSTEM) of the TYRE-SYSTEM double light is on
- On unit, SYSTEM FAILED light is on

(b3) On unit

- Release test switch
- Press and release RESET pushbutton

(b4) Check that lights mentioned in step (b2) are off

(c) On shelf 5-216, on unit return test selector to OFF position

(3) System check with aircraft on jacks

(a) Perform a landing gear retraction (Ref. 32-31-00,

Adjustment/Test) and check that :

(a1) On Flight Engineer's panel 12-214, TYRE-SYSTEM double light is off

(a2) On unit no light is on

(b) Perform a landing gear extension (Ref. 32-31-00, Adjustment/Test) and check that :

(b1) On Flight Engineer's panel 12-214, TYRE-SYSTEM double flight is off

(b2) On unit, no light is on

(c) Lower the aircraft onto its wheels (Ref. 07-11-00)

(4) System check with aircraft on ground

(a) Repeat operations described in functional test at paragraph 2.C.(3)

D. Close-Up

(1) Disconnect hydraulic ground power unit (Ref. 29-11-00, Servicing)

(2) Shut down equipment bay cooling system (Ref. 21=21=00)

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing)

(4) Make certain that working area is clean and clear of tools and miscellaneous items of equipment

(5) Remove safety stay

(6) Remove safety barriers

(7) In RH electronics rack, install panel 216ES

STRAIN GAGE HOUSING

APPROVED REPAIRS

1. General

The following procedure deals with replacement of the strain gages installed on the main gear bogie beams.

2. Approved Repairs on Strain Gage Housing

A. Equipment and Materials

DESCRIPTION	PART No.
Solder	MMJ132-8
Conditioner	MMJ150-1
Neutralizer	MMJ150-2
M Coat D	MMJ140-30A
Sealants (Ref. 20-30-00, No. 352)	
Sealants (Ref. 20-30-00, No. 391)	
Sealants (Ref. 20-30-00, No. A358)	
Electro-cleaner	SCM 4100
Sealants (Ref. 20-30-00, No. A359)	
Protection and Paint (Ref. 20-30-00, No. 631)	
Protection and Paint (Ref. 20-30-00, No. 632)	
Glues and Adhesives(Ref. 20-30-00, No. 301)	

B. Prepare

(1) Jack up aircraft (Ref. 07-11-00)

(2) Remove wheels adjacent to strain gage to be removed (Ref. 12-37-00)

(3) Remove associated brake units (Ref. 32-42-11, Removal/Installation).

NOTE : In the case of front strain gages remove front deflector (Ref. 32-11-12, Removal/Installation).

(4) Disconnect pitch damper (Ref. 32-11-31, Removal/Installation) and brake torque arms (Ref. 32-11-32, Removal/Installation) from bogie beam.

(5) Raise pitch damper and torque arms clear of bogie beam.

(6) Trip safety and tag the following circuit breakers.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF
TYRE DEFLATION DETECTION SYSTEM 28VDC	15-215	G430	E9
TYRE DEFLATION DETECTION SYSTEM 115VAC	14-215	G431	C5

(7) Remove protective cover (1) (Ref. Fig. 1)

(8) Identify faulty strain gage.

C. Preparation of surface (Ref. Fig. 2)

(1) Remove Viton

(2) Remove Glue

(3) Remove gage (2) concerned

NOTE : Take care not to damage cadmium protection.

(4) Carefully degrease cadmium with pure acetone.

(5) Apply Product MMJ150-1 and wipe with a clean cloth.

(6) Neutralize with Product MMJ150-2

D. Gage Sticking

- Prepare gage
  Cut tabs to 12mm ± 5mm (.4724 ± .1968 in.) position gage on a piece of transparent adhesive tape.

- Prepare KYOWA Glue
  20 parts of product A
  1 part of product B

- Coat gage support with glue

- Position gage and remove excess glue by pressing from the center outwards.

- Apply a pressure of 300 to 500 g/cm for 20 minutes (place a sheet of teflon, rubber material and iron plate on the gage).

- Remove adhesive tape.

- Measure gage bridge resistance.

  R = 350 OHM ± .5 OHM.

E. Polymerization

(1) PC 12 glue

If measurement of gage bridge is correct, heat 30 min at 30°C (86°F).

(2) Gage protection

- Cover gages and non painted parts with a thin coat of glue.

- Heat 30 min. at 30°C (86°F).

F. Wiring (Ref. Fig 3)

(1) Gage bridge

Position the colored wires previsiously cut to 190mm (7.480 in).

(2) Connection plate

Cary out wiring between connection place and connectors.

R NOTE : The rear axle configuration is identical
R to that of the front axle except that the
R cables between 3-4 and F-E are not crossed.

G. Gage Bridge Balancing (Duration 30min.) (Ref. Fig. 4)

Solder two shunts to the connection plates then supply the bridge via the connector using a 35mA DC generator.

Determine the length of manganin wire to be inserted in one arm of the bridge on the figure 5.

Replace on shunt by this resistor mounted on a teflon sheat acting as a coil (Ref. Fig. 4)

Measure again the signal delivered by the gages ; it must still be less than ± 5mV.

H. M.Coat polymerization

- Apply M.Coat D (MMJ140-30A) with a brush on all connections. The product may be applied to gages and glue.

- Heat 30 min. at 30°C (86°F) then heat 1 hour at 50°C (122°F)

I. PR Protection

When the electrical insulation is dru, apply protection to assembly (gages, wiring, bridges, sheaths, etc...) using PR 1426.

J. PR 1426 polymerization (Ref. Fig. 6)

- Heat 2 hours at 40°C (104°F)

- Heat 8 hours at 60°C (140°F)

K. Titanine Protection

When the PR is dry, apply titanine and heat 30 min. at 60°C (140°F).

L. Assembly

- Assemble the strain gage housing

- Remove safety clips and tags and reset circuit breakers G430 and G431.

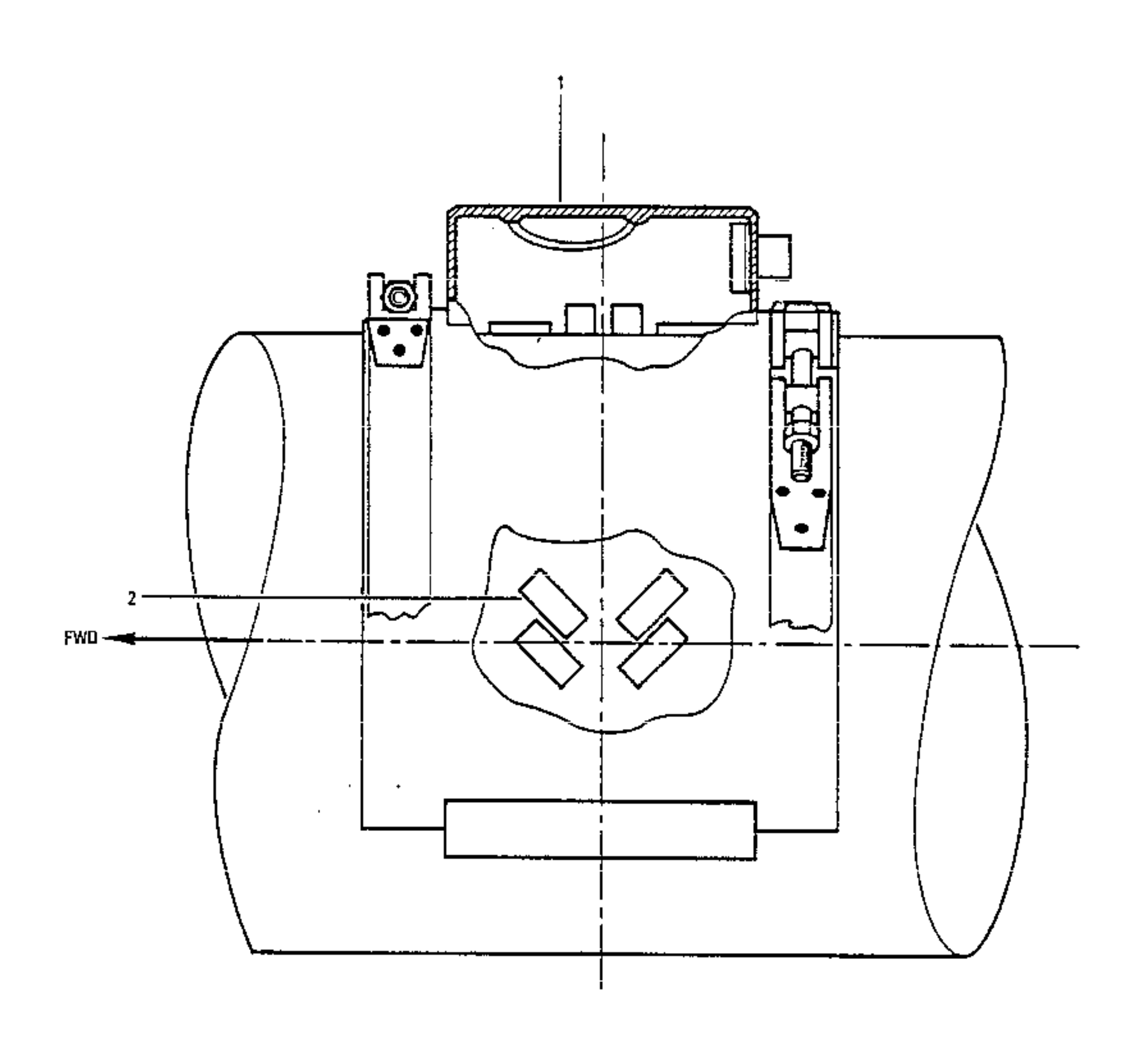
- Connect pitch damper and brake torque arms (Ref. 32-11-31 and 32-11-32, Removal/Installation)

- Install brake units (Ref. 32-42-11, Removal/Installation).

- Install wheels (Ref. 12-37-00).

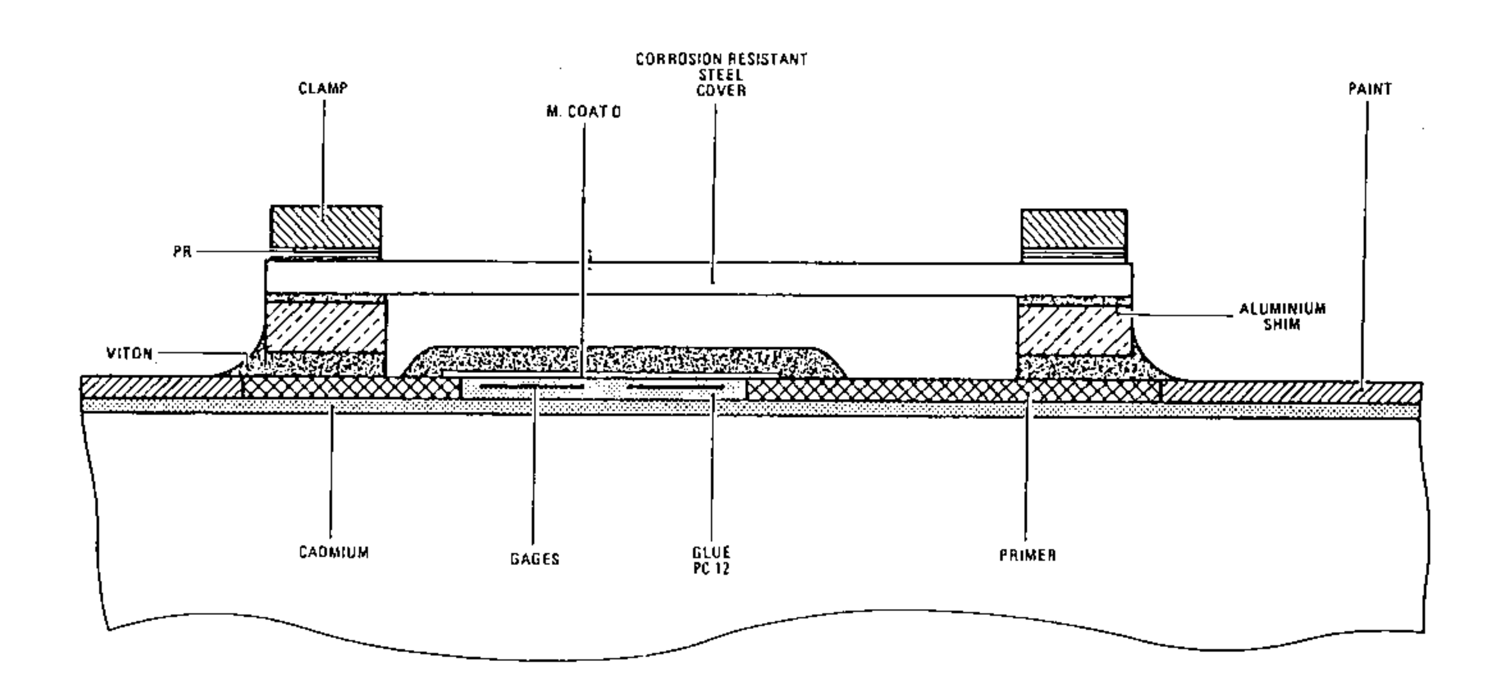
- Lower aircraft onto its wheels (Ref. 07-11-00)

3. Test : (REF. 32-48-11)

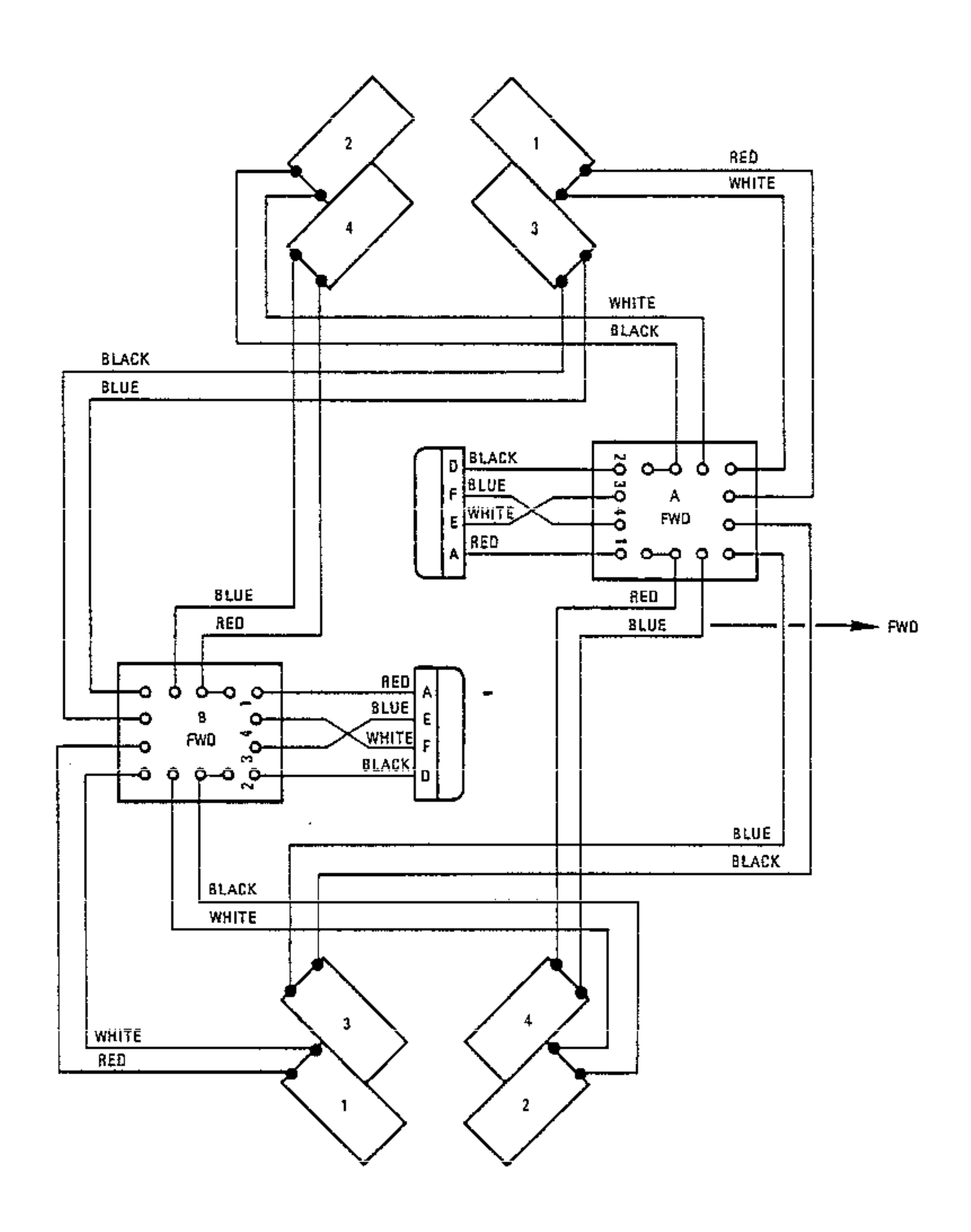


CUTAWAY VIEW OF HOUSING
FIGURE 1

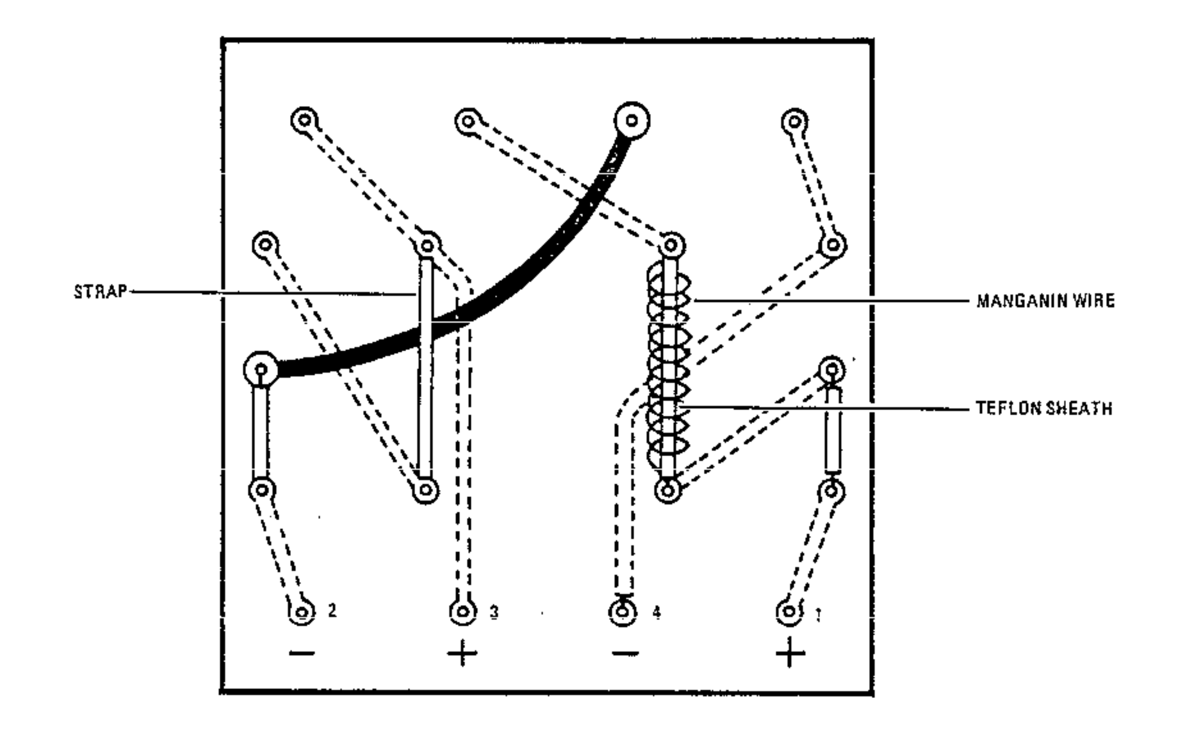




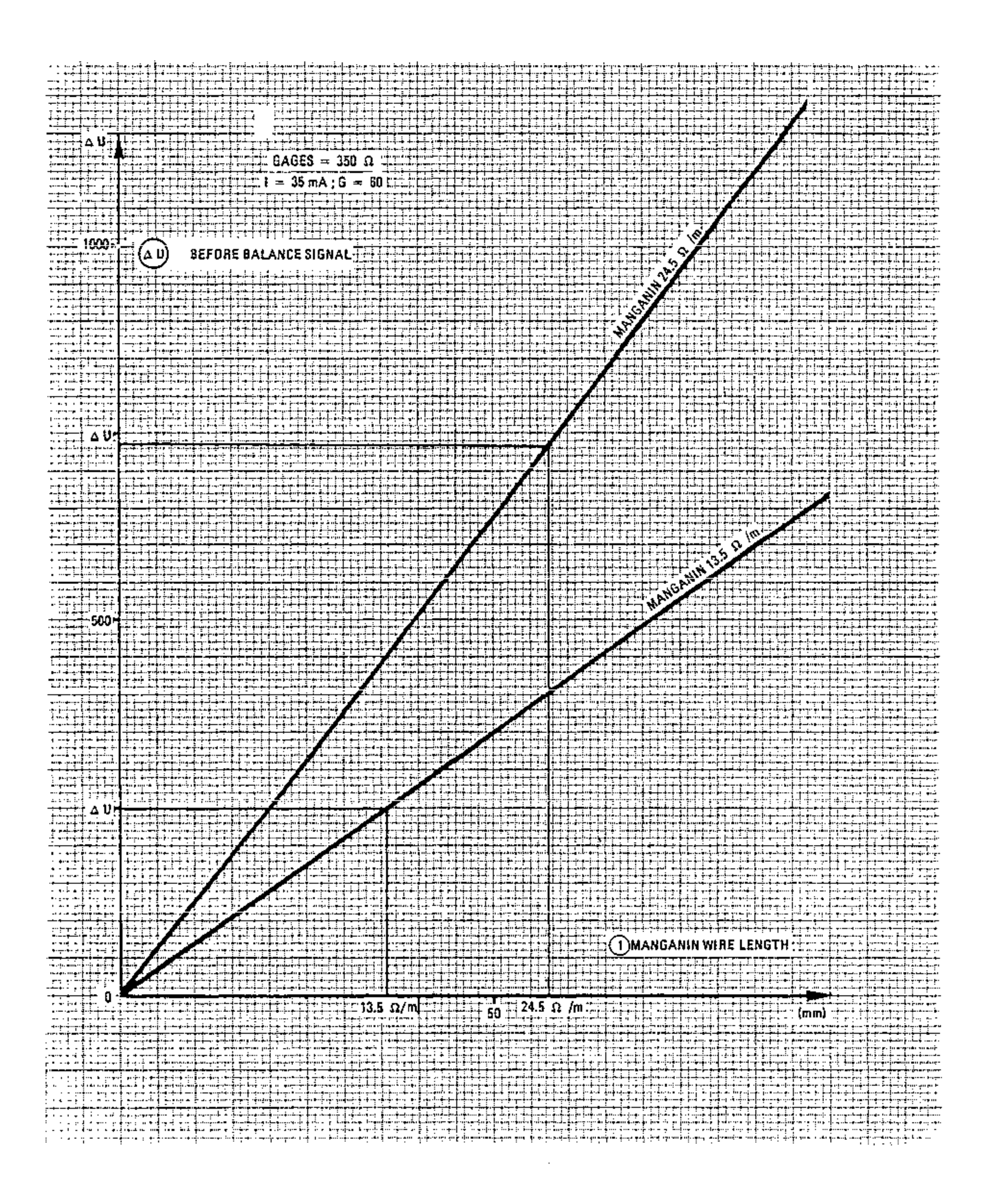
LAYOUT OF GAGES ON BOGIE BEAM
FIGURE 2



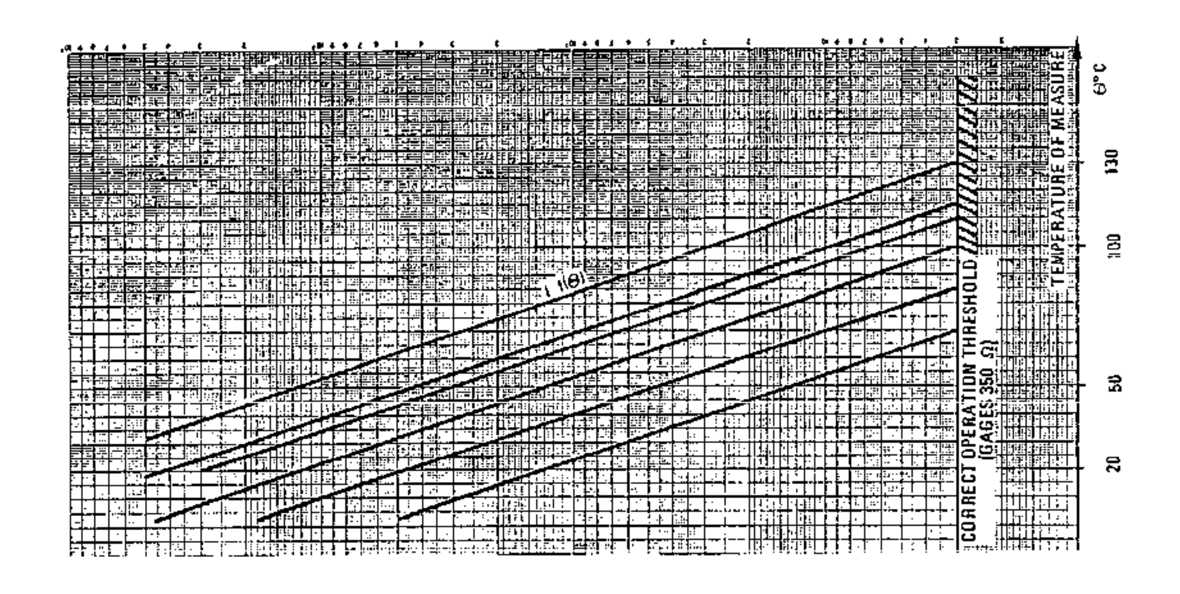
FRONT STRAIN GAGE HOUSING-WIRING
FIGURE 3

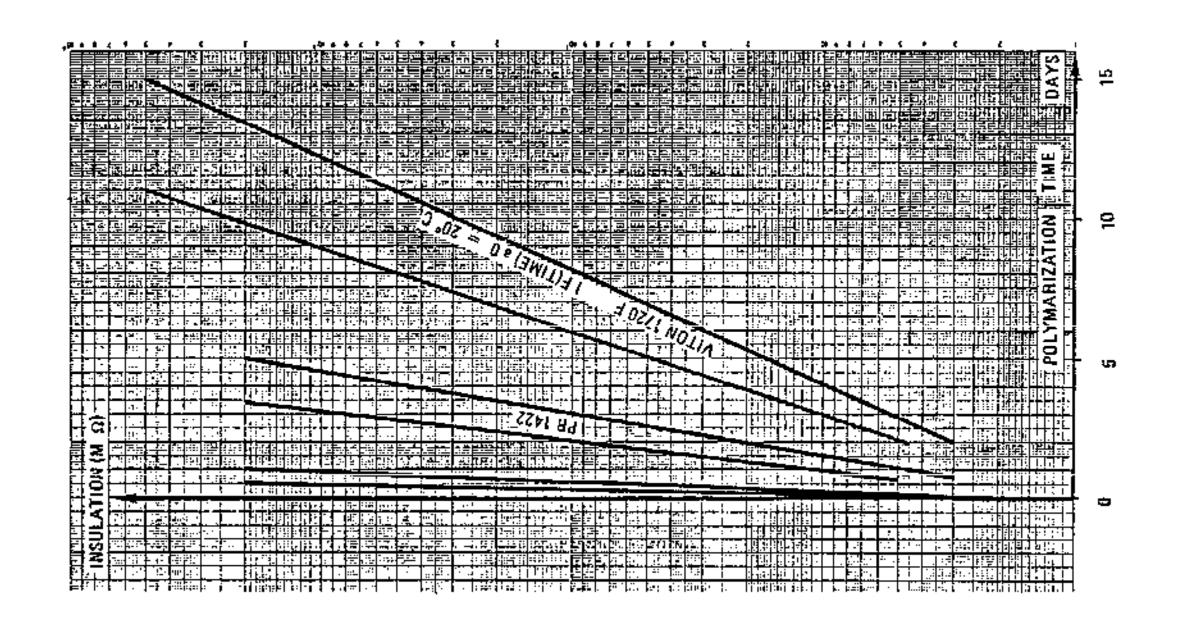


GAGE BRIDGE BALANCING
FIGURE 4



BALANCE CURVES
FIGURE 5





INSULATION WITH RESPECT OF TEMPERATURE AND TIME
FIGURE 6

R After SB 32-079-01 For A/C 001-007,

FLAT TYRE DETECTION UNIT REMOVAL/INSTALLATION

1. General

The FLAT TYRE DETECTION UNIT (G439) is located in the RH electronics rack, on shelf 5-216

2. Removal/Installation

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	-
Blanking Caps	-
Ventilation Outlet Blanking Plate	-
Electrical Ground Power Unit	-

B. Prepare

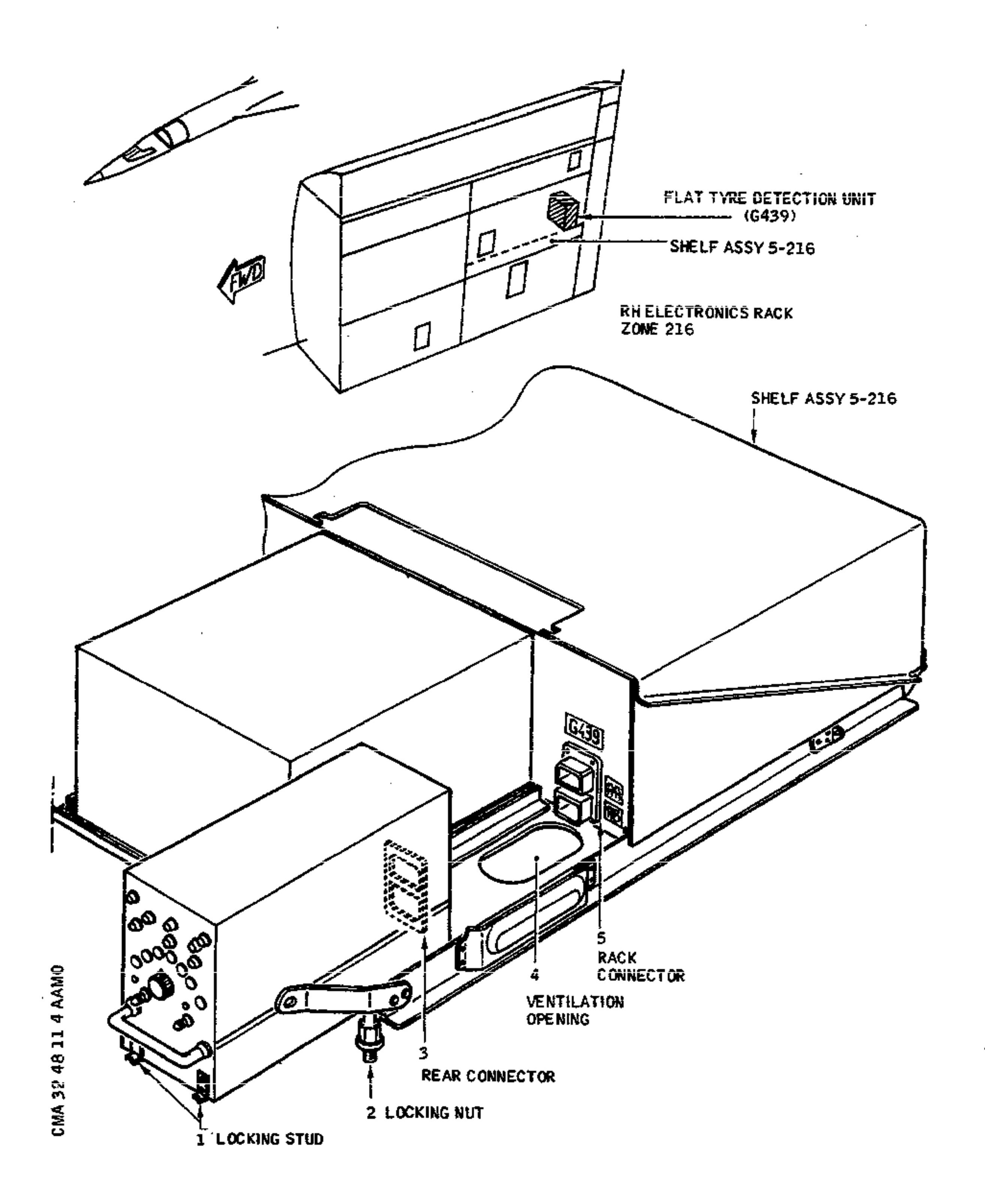
(1) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
TYRE DEFLATION DETECTION SYSTEM 28VDC	15-215	G430	E 9
TYRE DEFLECTION DETECTION SYSTEM 115VAC	14-215	G431	C 5

(2) Remove panel 216ES from electronics rack to gain access to shelf 5-216

C. Remove (Ref. Fig. 401)

(1) Loosen locking nut (2) until locking stud (1) of flat tyre detection unit is free



Flat Tyre Detection Unit - Removal/Installation
Figure 401

(2) Lower locking nut retaining shaft

(3) Slowly pull handle of flat tyre detection unit to free rear connector (3) from rack connector (5). Pull out until flat tyre detection unit is completely disengaged from rack slides and remove unit.

(4) Cap connectors (3) and (5)

(5) Install blanking plate on ventilation outlet (4)

D. Preparation of Replacement Component

(1) Make certain that rack is clean and connectors are undamaged and bear no trace of oxidation.

(2) Visually check that :

- Replacement flat tyre detection unit is in correct condition.
- Connectors are undamaged and bear no trace of oxidation

E. Install

(1) Remove blanking plate from ventilation outlet on shelf.

(2) Remove blanking caps from connectors

(3) Position flat tyre detection unit on rack and slowly slide unit home taking care to correctly engage plug in receptacle

(4) Lift locking nut (2) shaft, engaging nut on locking stud, fully tighten nut.

F. Test

(1) Remove the safety clips and reset the circuit breakers tripped at paragraph 2.B.(1)

(2) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing)

(3) Start up equipment bay cooling system (Ref. 21-21-00)

(4) On shelf 5-216, on FLAT TYRE DETECTION UNIT front panel.

(a) Place test selector in position 1

(a1) Place and hold test switch in TEST position and check that :
- FL, RL, FR, RR and SYSTEM FAILED lights and LED 1 come on.

(a2) Release test switch and press RESET push-button

(b) Place test selector in position 2

(b1) Place and hold test pushbutton in TEST position and check that :
- RG, TYRE lights and LED 2 come on

(b2) Release test pushbutton and press RESET push-button

(c) Place test selector in position 3

(c1) Place and hold test switch in TEST position and check that :
- only LED 3 comes on

(c2) Release test switch and press RESET push-button

(d) Place test selector in position 4

(d1) Place and hold test switch in TEST position and check that :
- SYSTEM FAILED light and LED 4 come on

(d2) Release test switch and press RESET push-button

(e) Place test selector in position 5

(e1) Place and hold test switch in TEST position and check that :
- SYSTEM FAILED light and LED 5 come on

(e2) Release test switch and press RESET push-button

(f) Place test selector in position 6

(f1) Place and hold test switch in TEST position and check that :
- LG, TYRE and SYSTEM FAILED lights and LED 6

come on

(f2) Release test switch and press RESET push-button

(g) Return test selector to OFF position

G. Close-Up

(1) Stop equipment bay cooling system (Ref. 21-21-00).

(2) De-energize the aircraft electrical system and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(3) Install panel 216ES on RH electronics rack.

STEERING - DESCRIPTION AND OPERATION

1. General

Nose wheel steering comprises an electro-hydraulically operated system mechanically controlled from the flight compartment.

A. Mechanical control is accomplished either through the rudder pedals or through the steering control handles.
Use of the rudder pedals during take-off and landing provides wheel travel of ± 10° maximum.
R The steering control handles used during taxying provide maximum nose gear wheel travel of ± 60°. Orders transmitted by the control handles override orders from the rudder pedals.

B. The nose gear wheel steering system is powered through the Green hydraulic system.
In the event that Green system pressure drops below 2755 psi (190 bars) the Yellow hydraulic system automatically takes over.

C. Monitoring provisions make the controls inoperative in the event of failure or if operating criteria are not fulfilled Shimmy damping is then provided through a self-contained back-up unit powered through the nose gear door Green hydraulic closing system.

D. Use of nose gear wheel steering is only possible when both
R of the following conditions are simultaneously fulfilled : landing gear extended, nose gear shock absorber compressed.

E. Indicating and monitoring are ensured through a NOSE WHEEL indicator light on brake ANTI-SKID and NOSE WHEEL steering
R test indicator (G190) located on First Officer's instrument
R panel as well as through two STEERING warning lights one of which is located on panel 3-211 and the other on panel 3-212.

F. During aircraft towing, if the system is pressurized, safety key C22646 must be inserted in interphone box (R75) located on the nose gear wheel leg thus disconnecting the steering system.

R 2. Description (Ref. Fig. 001, 002 and 003)

A. Mechanical Control

The steering system mechanical controls located in the flight compartment are operated through the Captain and First Officer interconnected rudder pedals as well as through the two steering control handles.
These control handles are located on the Captain and First Officer side consoles respectively. They operate, through rods, universal joints and bellcranks a non-linear (non-uniformly accelerated motion) cam system providing a reduced steering control handle/nose landing gear wheel ratio
R via control unit (G94).
The rudder pedals control the non-linear system at the same time as the control handle via a spring rod.

R B. Nose wheel Steering Control Unit (G94)

R Nose wheel steering control unit (G94) located in the flight compartment receives mechanical orders from the rudder pedals or the control handles and retransmits them electrically to the nose wheel steering system.
The unit includes two resolvers which are connected mechanically and have an angular difference of 4° in electrical signals. One is associated with the control channel and the other with the monitoring channel.

R C. Nosewheel Steering Electronic Unit (G96)

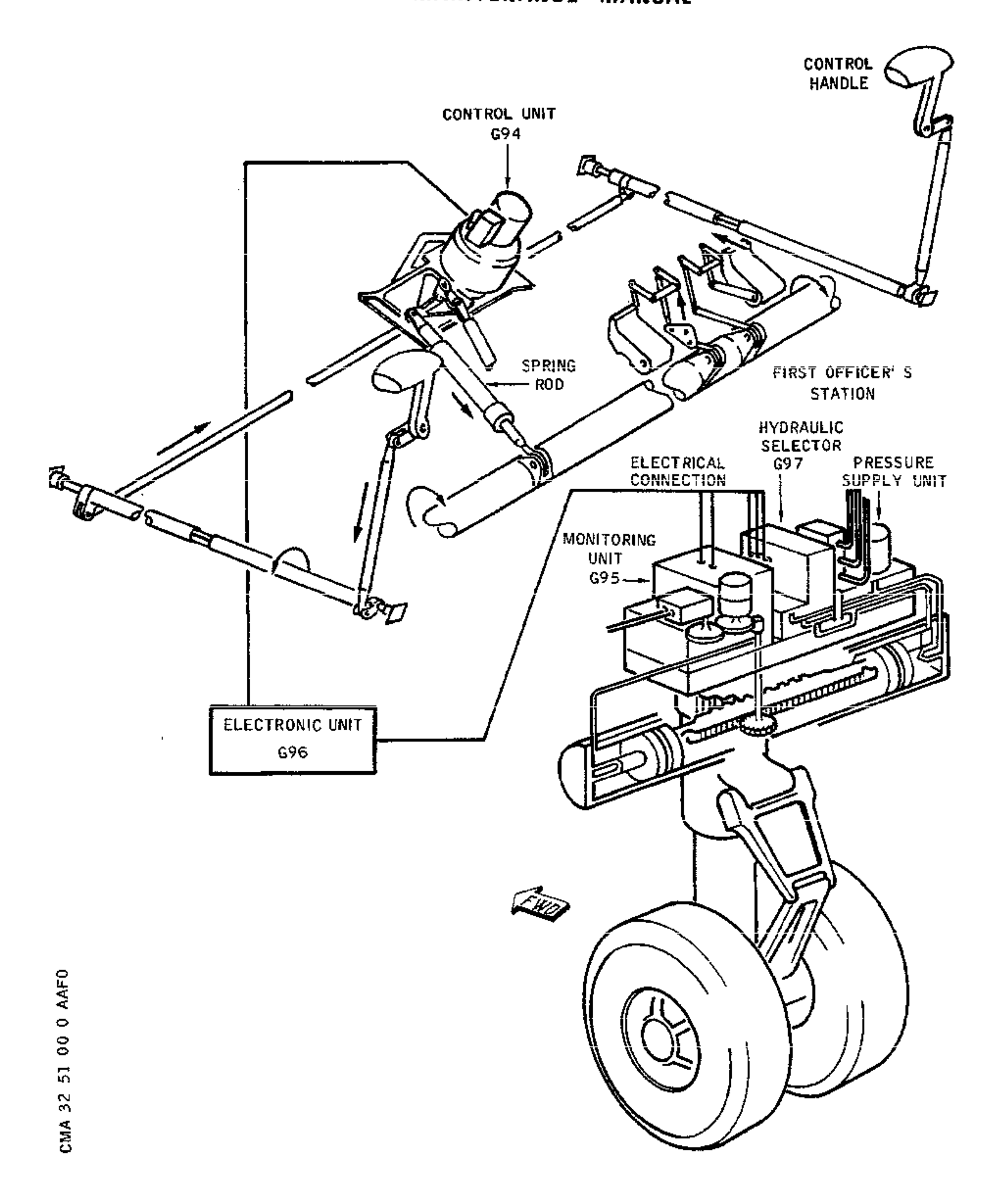
Electronic unit (G96) located in the equipment bay, zone
R 9-215, includes :

- A set of two printed circuit boards, comprising :
  - a control printed circuit board : power amplifier preamplifier.
  - a monitoring printed circuit board : amplifier and decision logical comparitor.
- Two power supply relays and two electrovalve supply valve block relays as well as a time-delay relay for control of indicator lights.

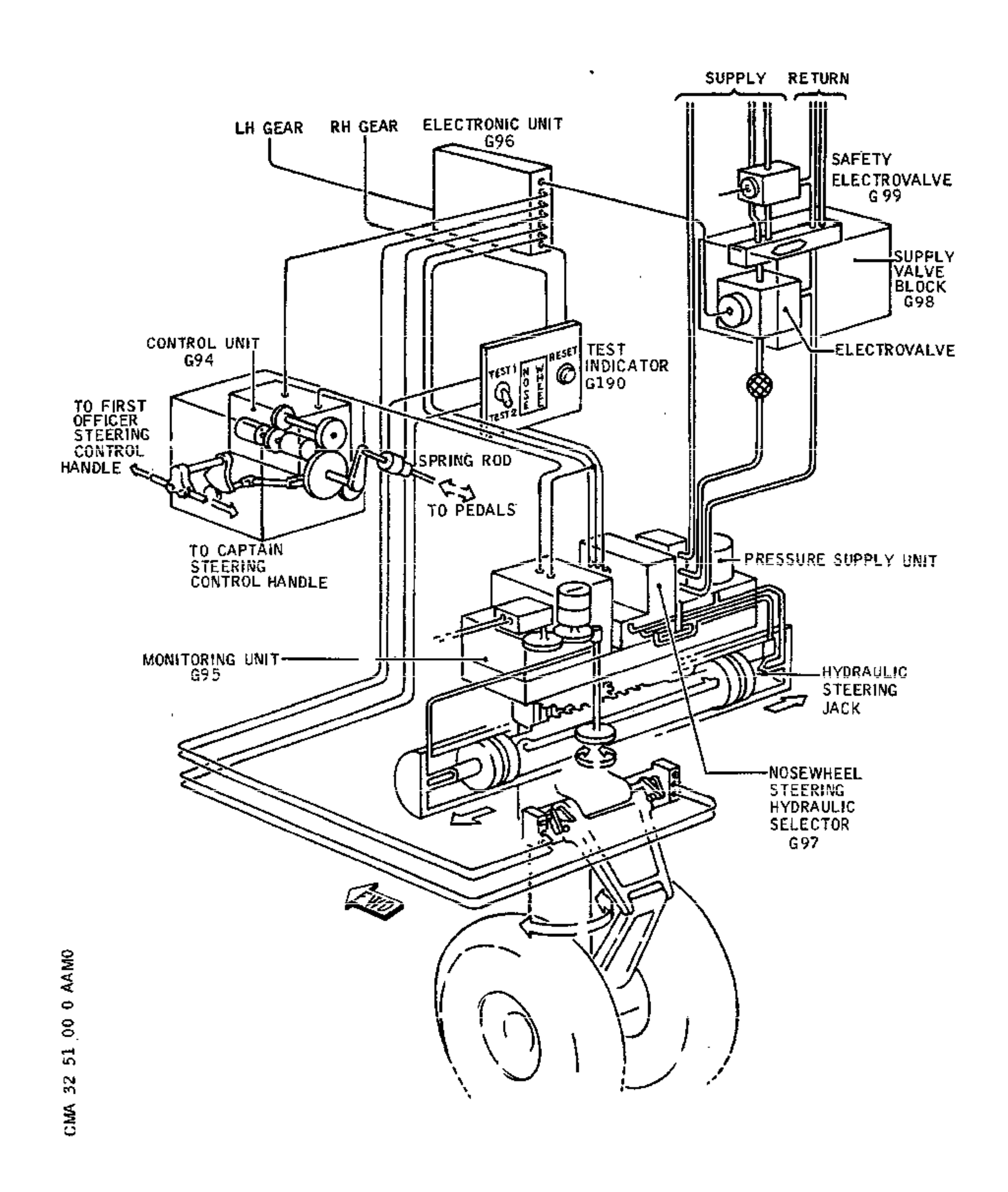
R D. Nose Wheel Steering Hydraulic Selector (G97)

The selector is installed on the base plate located above the steering jack.
It includes an electrically controlled servo valve and a hydraulic selector.

(1) The servo valve is an electro-hydraulic unit intended to port pressure to and regulate travel speed of the



R Mechanical Control
Figure 001



R

Steering System
Figure 002

R steering jack piston in accordance with flight crew orders through a system of flaps/jets controlled through a torque motor.

(2) The hydraulic selector enables :

(a) In steering operation, the LH side or RH side of the steering jack to be pressurized.

(b) In anti-shimmy operation, the servo valve anti-shimmy system to be isolated and both chambers of the steering jack to be interconnected.

R E. Nosewheel Monitoring Unit (G95)

The monitoring unit is mounted on a base plate located above the steering jack. This is an electrical unit which transmits a signal, corresponding to the angular position of the nose gear wheels, through two resolvers, to the control channel and to the monitoring channel.

F. Pressure Supply Unit

This is a hydraulic unit mounted on a base plate located above the steering jack.

It includes :

(1) A two-state calibrated valve, whose purpose is to automatically supply the anti-shimmy system using the nose gear door Green system pressure (closing side) when steering jack hydraulic supply is cut off. It also acts as a check valve if Green hydraulic pressure at the gear door is cut off.

(2) A pressure relief valve designed to maintain pressure at 435 psi (30 bars).

(3) A filter which specifically protects the servo-valve.

(4) A pressurization accumulator which is designed to compensate contraction of fluid due to temperature differences during anti-shimmy operation. Under high pressure accumulator pressure is 218 psi (15 bars).

G. Steering Jack

The steering jack located on the nose gear leg is a hydraulic jack controlled through nosewheel steering hydraulic
R selector (G97). The piston moves a rack which in turn
R drives a toothed sector on the rotating tube. This tube ro-

tates on the leg and moves the axle beam via the torque links.

H. Nosewheel Steering Supply Valve Block (G98)

The valve block (G98) is located in the nose landing gear bay. It serves two purposes :

(1) It enables pressure to be ported to the steering system via the supply valve block electrovalve. To accomplish this both the associated solenoids must be energized.

(2) It enables the Green hydraulic system to be replaced by the Yellow hydraulic system in the event that Green system pressure drops below 2755 psi (190 bars).

I. Safety Electrovalve (G99)

The safety electrovalve cuts off the Yellow system pressure supplied to valve block (G98) whenever a drop in level is detected in the Yellow tank (1st level). It is located in the nose gear bay.

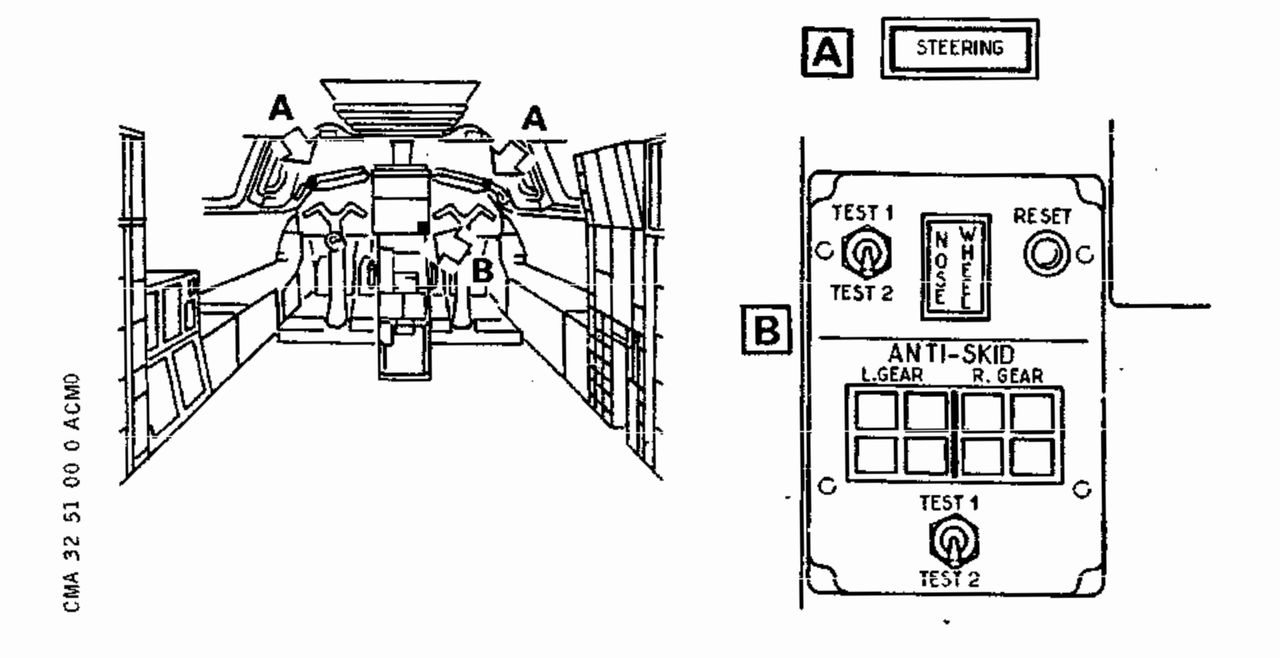
J. Brake ANTI-SKID and NOSE WHEEL Steering Test Indicator (G190)

Test indicator (G190) steering section includes a switch, a NOSE WHEEL warning light and a RESET pushbutton.

The stable centre-position switch enables ground tests to be accomplished on TEST 1 and TEST 2 opposed positions.

R K. STEERING Warning Lights

Two STEERING warning lights located on panel 3-211 and panel 3-212 respectively illuminate in parallel with NOSE WHEEL warning light on test indicator (G190).



Indicating
Figure 003

3. Valve Block - Nosewheel Steering Supply (G98)

A. General

The nosewheel steering supply valve block enables the steering system to be supplied with Green or Yellow hydraulic pressure.

B. Description

The nosewheel steering supply valve block includes :

- a spool valve (A).
- a slide valve (J) associated with actuating piston (L) and bias piston (H).
- two ball-type pilot valves (E) and (F) each operated by a solenoid.
- a check valve located in the steering system return line.
- line unions (B) (C) (D) (G) (K) (M).

C. Operation

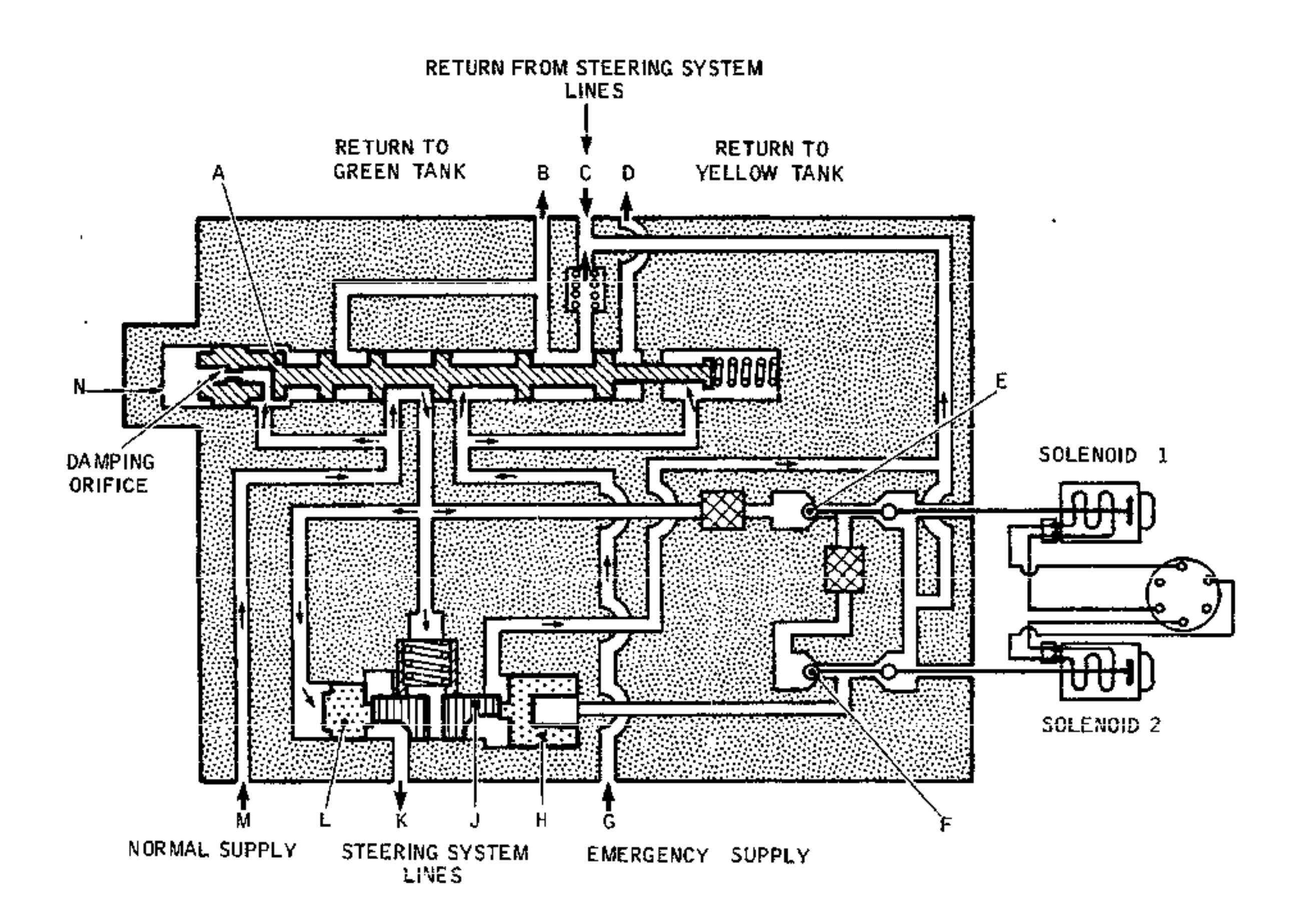
(1) Normal supply (Ref. Fig.004 and 005)

(a) Solenoids de-energized (Ref. Fig. 004)

Green hydraulic pressure, delivered at (M), moves spool valve (A) to the right.
Pressure is simultaneously delivered to slide valve (J), slide valve actuating piston (L) and pilot valve (E).
Pressure moves slide valve (J) to the right and shuts off fluid delivery to port (K).
Pilot valve (E) is automatically closed.
In this configuration Yellow hydraulic pressure is de-activated and steering system exhaust pressure (C) is ported to Green hydraulic system return tank (B).

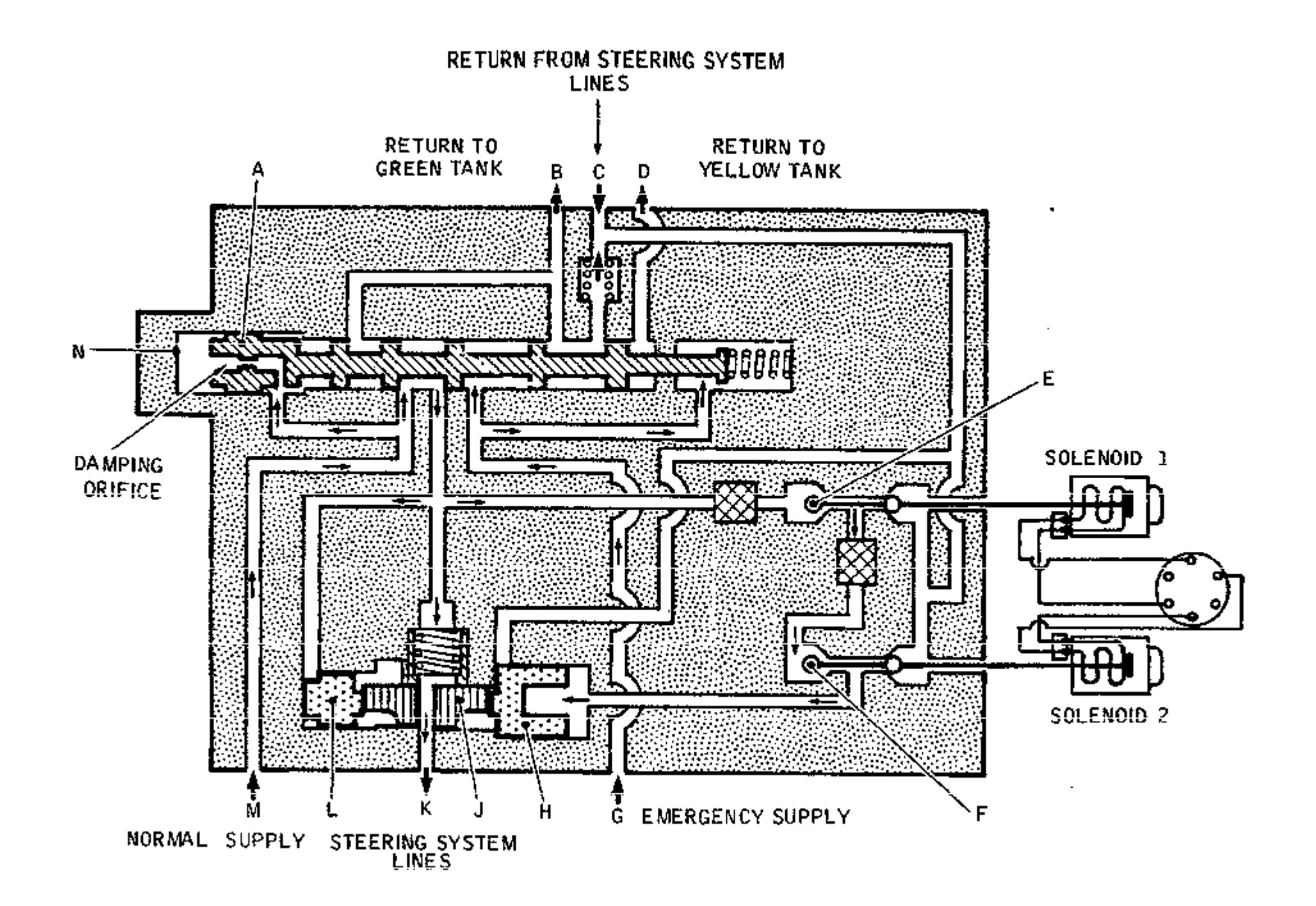
R (b) Solenoids energized (Ref. Fig. 005)

When power is applied to solenoids, pilot valves (E) and (F) are opened and the return lines of these valves closed.
Pressure passes to slide valve (J) bias valve (H) which, because of its larger effective area, overcomes the opposing force of actuating piston (L).
The slide valve (J) moves and enables the hydraulic fluid to pass through port (K) and



CMA 32 51 00 0 AECO

Supply - Solenoids De-Energized
Figure 004



CMA 32 51 00 0 AEJO

Supply - Solenoids Energized
Figure 005

supply the steering system.
Steering system exhaust pressure (c) is ported towards Green hydraulic system return tank (B).

(2) Emergency supply

Nosewheel steering supply valve block Emergency operation (Green hydraulic pressure de-activated, Yellow hydraulic pressure activated) is the same as Normal operation except that spool valve (A) moves to stop position against seat (N) thus shutting off Green hydraulic fluid and allowing Yellow hydraulic fluid to pass.
Steering system exhaust pressure (C) is ported towards (D).

NOTE : If one or both solenoids fail the associated pilot valve closes thus preventing Green or Yellow hydraulic pressure from acting on bias piston (H).
In such case the steering system is not provided with hydraulic pressure.

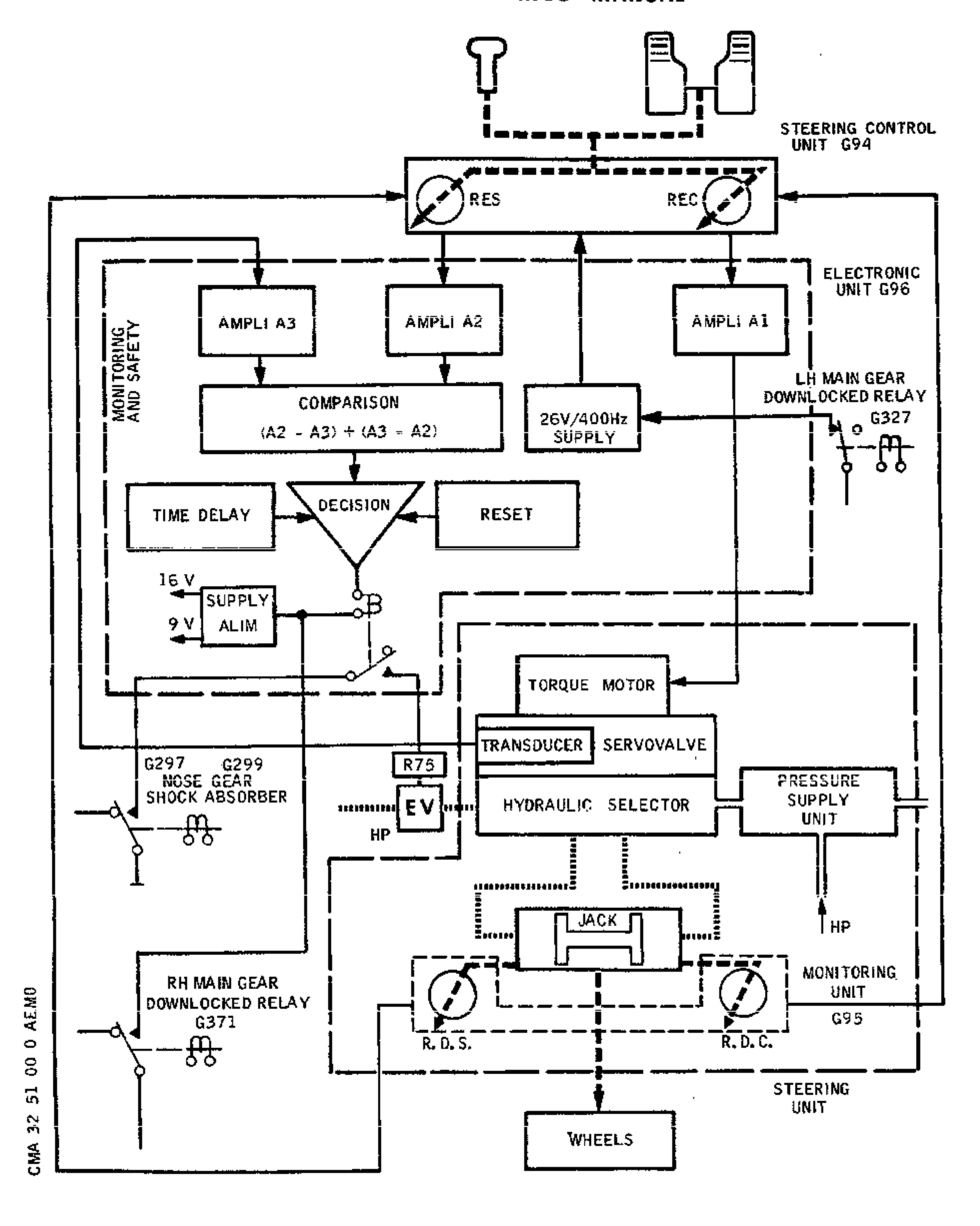
4. Operation (Ref. Fig.006 and 007)

A. Mechanical Control

Nose gear wheel steering is achieved by means of a double-acting hydraulic steering jack installed on the gear leg lower section.

Steering orders are transmitted either from the steering control handles or from the rudder pedals.

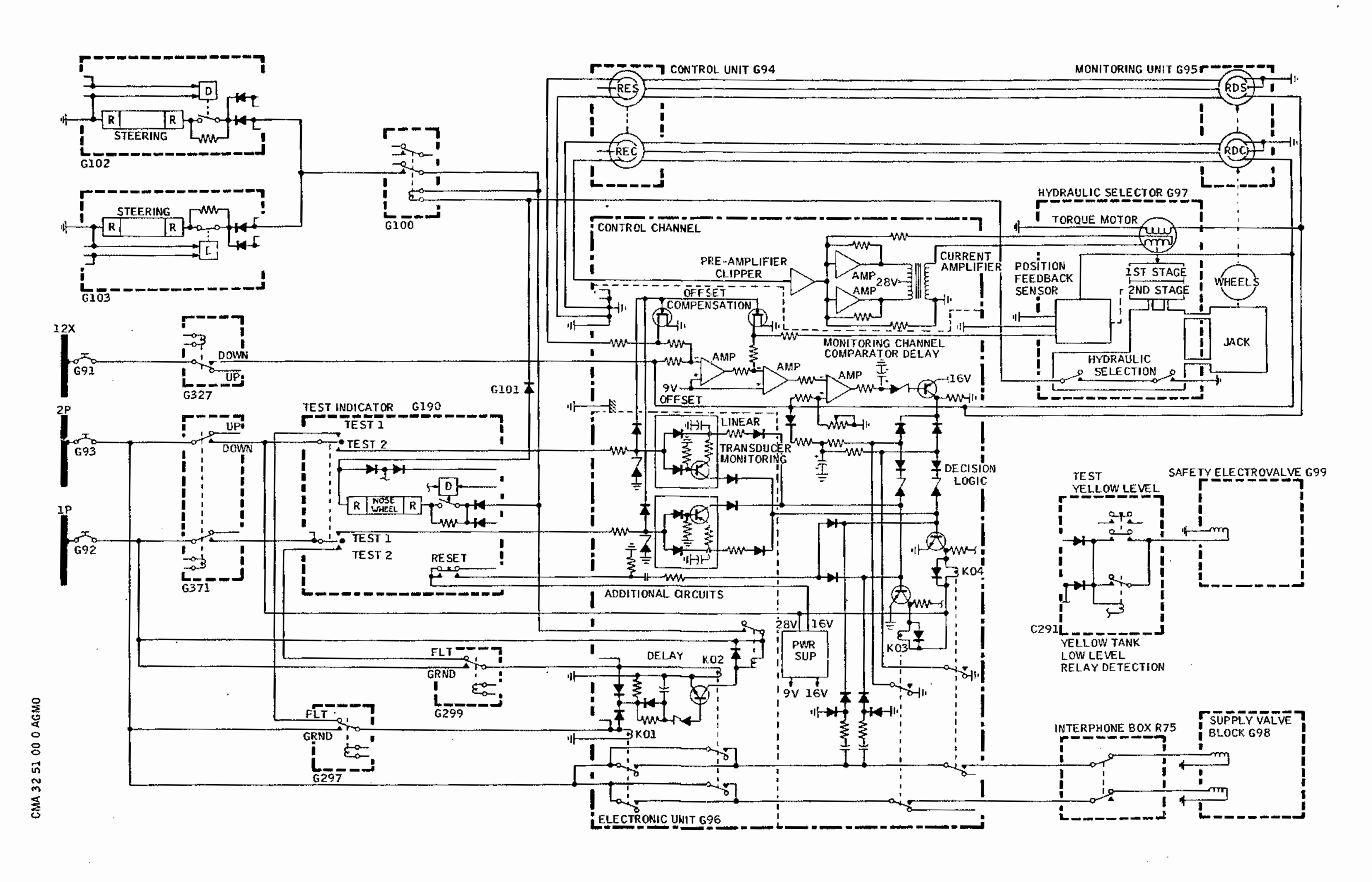
The rudder pedals act on the non-linear (non-uniformly accelerated motion) system at the same time as the control handles through a spring rod.
R This spring rod ensures that orders from the control handles override orders from the rudder pedals. Movement of the rudder pedals, even in flight, results in movement of the control handles. However operation of the control handles does not result in movement of the rudder pedals, since the spring rod operating threshold is less than that of the rudder control.
A neutral setting link rod provides artificial feel at the control handles. An automatic nose wheel centring device mounted inside nose gear shock absorber, consisting of two rollers integral with the fixed part, re-aligns nose gear rotating section when the two rollers come into contact with two cams.



R

Schematic
Figure 006

INTENTIONALLY BLANK



R

Nose Wheel Steering - Electrical System
Figure 007

B. Electrical Control

(1) Control Channel

R Resolver Rec located in control unit (G94) receives mechanically, a nose gear wheel steering order either through the rudder pedals or the control handles.

The mechanical order converted into an electrical order is compared with a signal generated by resolver
R Rdc in nosewheel monitoring unit (G95) which is associated with the position of the nose gear wheels. This results in an AC signal (voltage error or difference in position between the control and the wheels) whose amplitude and direction are respectivelly a function of the deviation and direction of the order received
R the position of the wheels. This signal is processed
R in relation to the Rdc resolver signal determined
R by the position of the wheels. This signal is processed by a preamplifier-clipper then amplified by a a voltage amplifier in electronic unit (G96). The output signal of this unit is then applied to a two-phase torque motor, one winding of which is subjected to a fixed excitation.

The signal is in phase or out of phase with respect to the torque fixed excitation which results in dis-
R placement of the torque motor in one direction or the other.

(2) Monitoring Channel

(a) The monitoring channel includes :

(a1) A synchro-detection channel similar to the control channel (with resolvers Res and Rds)

(a2) A linear transducer connected to the servo valve spool.

(a3) An electronic system (amplifier and a decision logical comparator).

(a4) Two relays installed in the electrical supply of each supply valve block electrovalve solenoid.

(b) Operation of Monitoring Channel

(b1) Basic Principle

Printed in England

The purpose of the monitoring channel is to check that the deviation between the control and the steering jack does not exceed a set value corresponding to 2° 30'.
If the threshold is exceeded, the decision logical comparator releases a fault signal. Electrical power to the supply valve block solenoid is then cut off through the two relays.
Steering system is then disconnected.
A time delay system holds the logical decision action so as to avoid spurious fault detection (servo valve spool opening response time).

(b2) Protection Against Response Lag Errors

The jack whose maximum displacement rate is 10° per second cannot respond to a very fast command signal. However the servo valve spool opens in the direction commanded by the signal.

The linear transducer delivers a signal whose amplitude and phase are a function of the direction and amplitude of opening of the servo valve spool. Maximum opening corresponds to 3°.
The signal from the synchro-detection channel whose amplitude is a function of the deviation between the control and jack position, and the phase, the direction of displacement of the jack with respect to the direction of the command given, is clipped at a value corresponding to 3° 30'.

In the case of a very fast command, since both these signals are in the same direction the decision logical comparator deducts the linear transducer signal from the synchro detection channel (3° 30' - 3°).
Therefore, the monitoring channel does not detect a failure so long as the direction of jack displacement tends to steer the gear wheels to the position corresponding to the
R Flight crew order.

(b3) Fast Runaway Detection

During fast runaway, the wheel steering angle exceeds the position corresponding

to the command given :

- The servo valve spool ports hydraulic pressure to the opposite chamber in the jack. It moves the linear transducer which delivers a signal corresponding to 3°.
- The synchro detection channel delivers a signal in the direction of the displacement of the jack.

Since these signals are in opposite directions, they are summed by the monitoring channel. The decision logical comparator therefore senses a deviation in excess of the threshold (2° 30'), whereas the jack only just starts moving and releases a fault warning.

(b4) Detection of Monitoring Channel Cut-Off

A permanent 4° offset between the monitoring channel resolvers is compensated by a - 4° signal injected into the comparator input.

In case of cut-off of the resolver channel the comparator will detect a 4° error and will transmit a fault signal.

C. Hydraulic Control

Power required to operate the steering system is provided :

(1) In normal operation, by the Green hydraulic system. If Green pressure drops below 2755 psi (190 bars) it is automatically replaced by the Yellow system through
R supply valve block (G98) spool valve.

R A safety electrovalve (G99) cuts off Yellow pressure whenever a level drop occurs in the Yellow tank (1st level).

(2) The system is powered through the nose gear door Green closing system during anti-shimmy operation.

D. Operating Conditions

(1) Normal Operation

(a) So as to fulfil steering system operating conditions (electrical and hydraulic power supply)

main gears must be extended and nose gear shock absorber compressed.

R (a1) Relay (G327) energized through LH gear down-locked microswitch (G54) enables electronic unit (G96) to be supplied with 26 Volts, 400 Hz power.

R (a2) Relay (G371) energized through RH gear down-locked microswitch (G53) enables both monitoring channel relays and electronic unit (G96) to be supplied with 28 VDC and ground tests to be performed.

R (a3) Relay (G297) energized through nose gear weight microswitch (G320) (nose gear shock absorber compressed) energizes in turn relay (K01) which serves to supply electrical power to both solenoids of supply valve block electrovalve.

R (a4) Relay (G299) energized through nose gear weight microswitch (G321) (nose gear shock absorber compressed) energizes in turn relay (K02) which serves to supply electrical power to both solenoids of supply valve block electrovalve.

(b) The nose landing gear is so designed that wheels are centred during ground roll by means of a spring rod.

(c) In flight, as soon as the nose gear shock absorber is expanded, the wheels are automatically centred by a system installed in the shock absorber.

(2) Electrical Fault

R The supply valve block electrovalve is no longer energized and therefore cuts off Green or Yellow hydraulic power.

R The anti-shimmy system then operates and is powered through nose gear door Green hydraulic closing system via the presure supply unit two-state valve.

(3) Electric and Hydraulic Faults

In the event of an electric or hydraulic failure, the steering system is disconnected.

Pressure in the anti-shimmy system is maintained by :

R (a) The pressure supply unit two-state valve. It cuts off Green pressure to the anti-shimmy system supplied from the nose gear door closing system.

(b) The two hydraulic selector spools. They cut off Green or Yellow system pressure to the anti-shimmy system and enable the anti-shimmy system to operate.

R (c) The pressure supply unit pressure relief valve. It stabilizes anti-shimmy system pressure at 435 psi (30 bars).

R (d) Pressure supply unit pressurization accumulator. It compensates contraction of fluid resulting from differences in temperature.

E. Normal Control Operation Without Action on Steering Control (Ref. Fig. 008)

(1) The supply valve block electrovalve is normally supplied if the monitoring channel detects no fault.

(2) If the steering control is not acted on, the control channel delivers no current to torque motor ; therefore neither of the servo-valve jets is closed off.

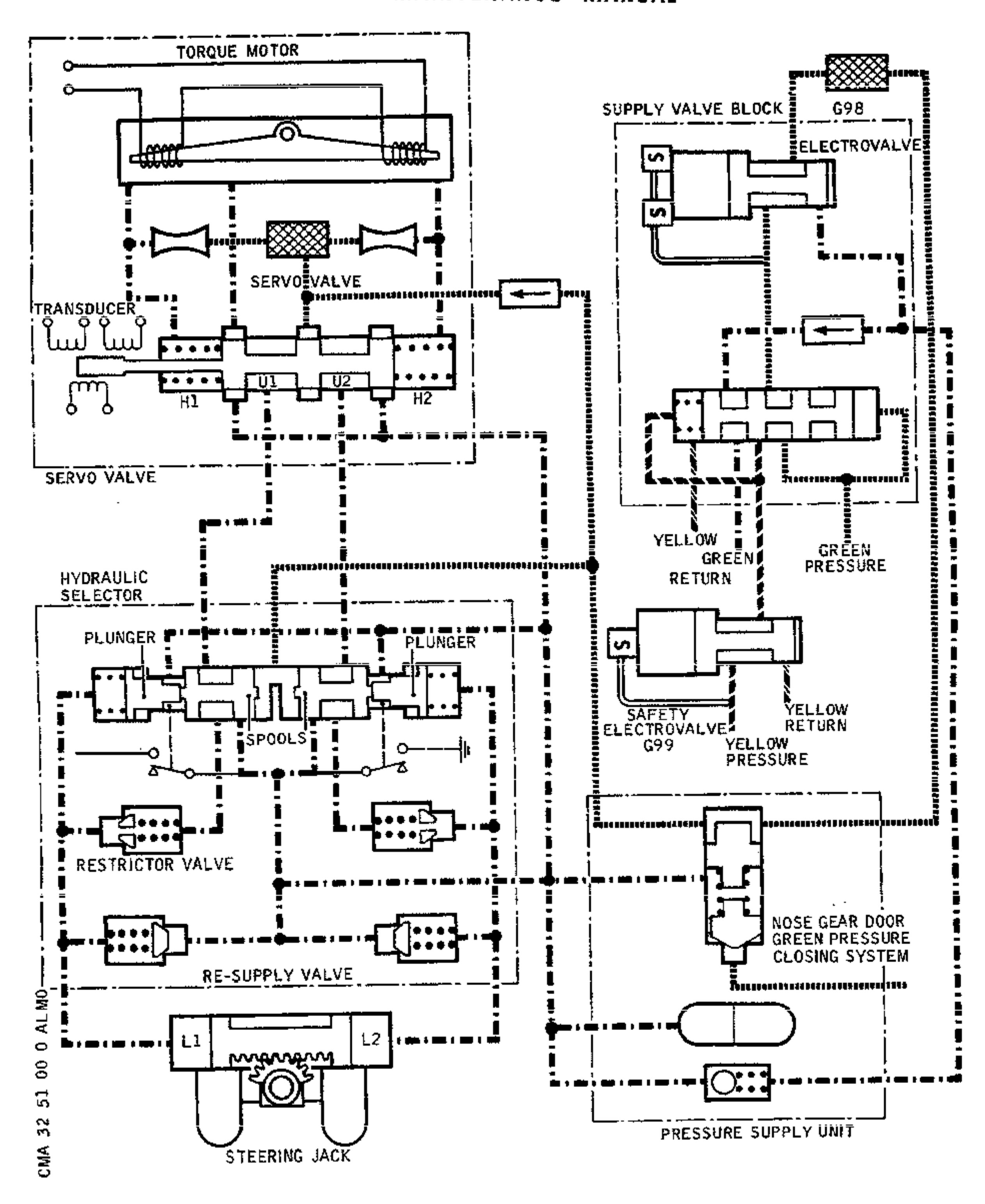
Since the supply valve block electrovalve solenoids are energized, hydraulic pressure is delivered through a filter to the selector and the servo-valve.

(3) The selector spools are displaced by fluid under pressure. Chambers L1 and L2 in the steering jack are isolated from each other and are connected to servo valve parts U1 and U2 respectivelly.

(4) The flap in balanced position maintains equal pressures in chambers H1 and H2.

(5) The servo valve spool is in neutral position.

The leakages created by the two servo valve jets return to the tank through the supply valve block pressure relief valve which thus maintains a pressure of 435 psi (30 bars) approximately in the internal system.



Nose Gear Wheel Steering
Figure 008

R

F. Normal Control Operation with Action on the Steering Control (Ref. Fig.009 and 010)

(1) The supply valve block electrovalve is energized if the monitoring channel detects no fault.

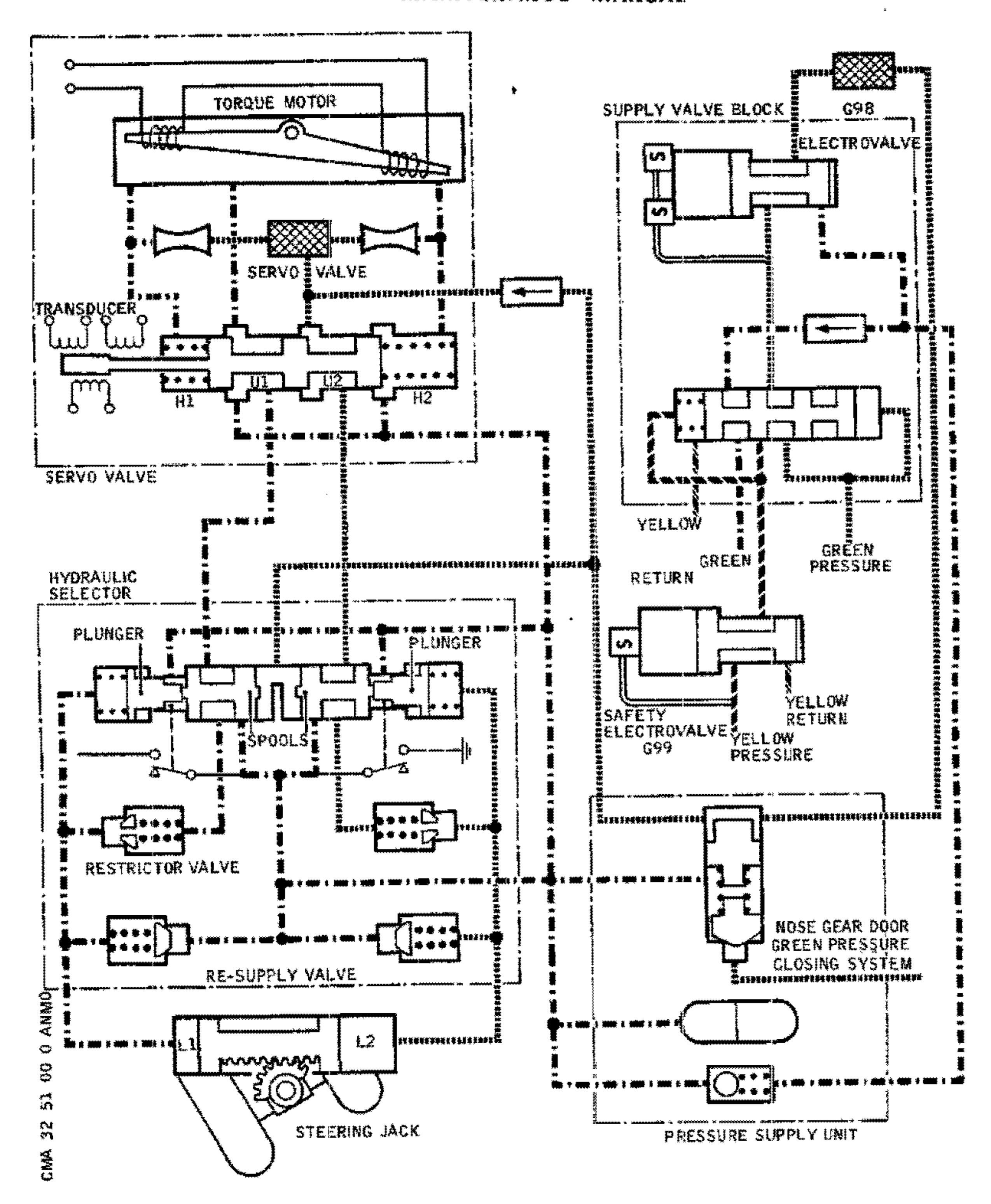
(2) With the steering control operated, the control channel powers the torque motor. This operates the flap which closes off the jet corresponding to the steering direction.
Closing off of the jet results in pressurization of chamber H2.

(3) Under the action of that pressure, the servo valve spool is displaced. High pressure fluid flows into steering jack chamber L2, while chamber L1 is connected with the part of the system pressurized to 435 psi (30 bars). This causes the steering jack to operate and consequently the wheels to turn in the direction of the order given.

(4) If an opposing torque occurs, the overpressure created on the side subjected to high pressure results in displacement of the selector plunger and spool.
The section of the system subjected to overpressure is momentarily connected to the pressurized part of the system by the displaced hydraulic selector spool via the diaphragm valve.
Opening of the opposite check valve prevents cavitation in jack chamber L1.

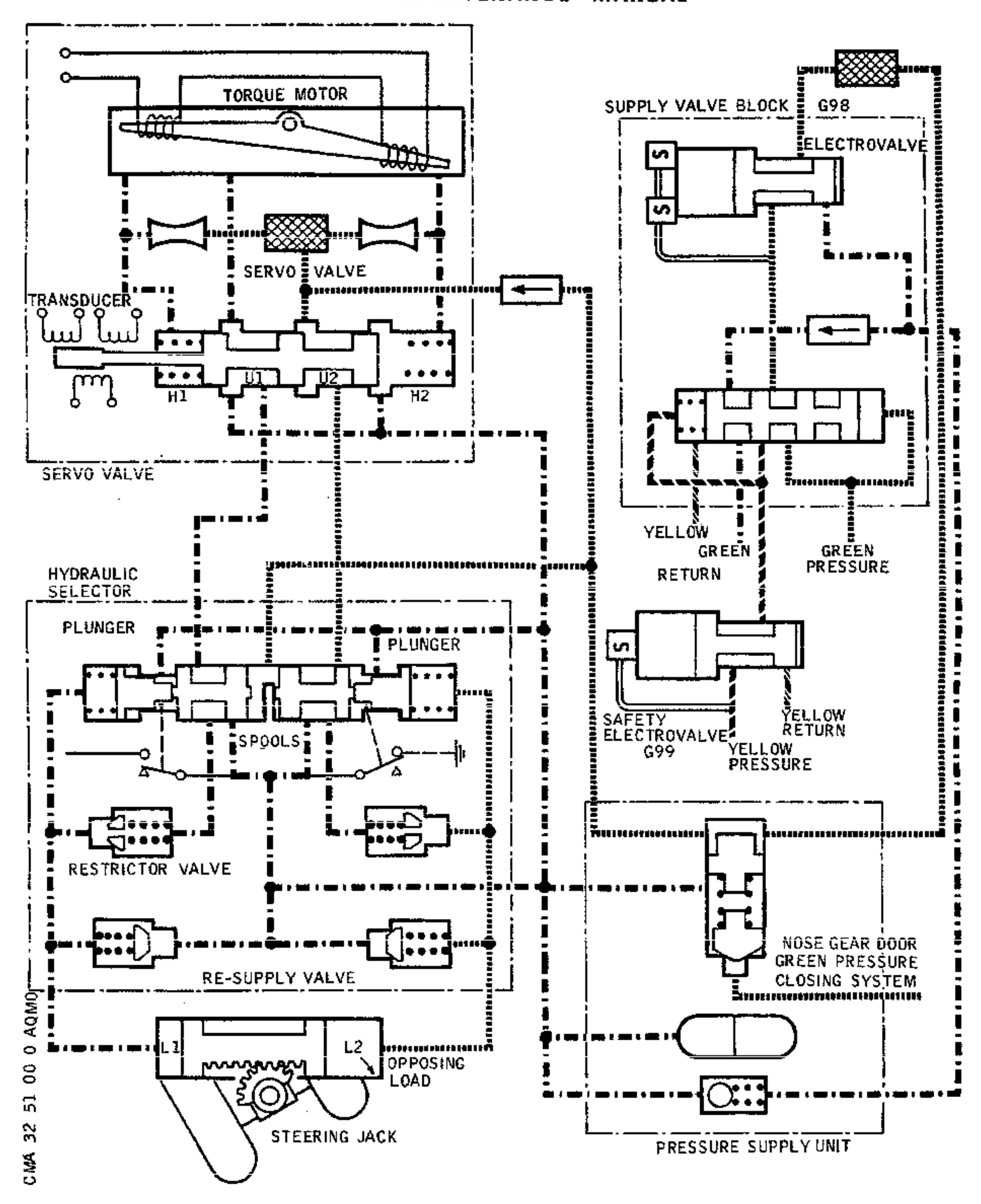
The microswitch of the spool subjected to overpressure moves from de-activated position to activated position, however, none of the indicator lights illuminate.

NOTE : Both microswitches must move to activated position before the indicator lights illuminate.



Nose Wheel Steering - LH Turn
Figure 009

R



R

Opposing Load
Figure 010

G. Operation with Steering System Disconnected (Ref. Fig. 011)

(1) The monitoring channel signals a fault, the supply valve block is no longer powered.

(a) The steering system hydraulic supply is cut off.

R (b) Supply lines upstream of supply valve block (G98) are connected to tank return.

(c) The hydraulic selector spools are moved to neutral position under action of the plungers.

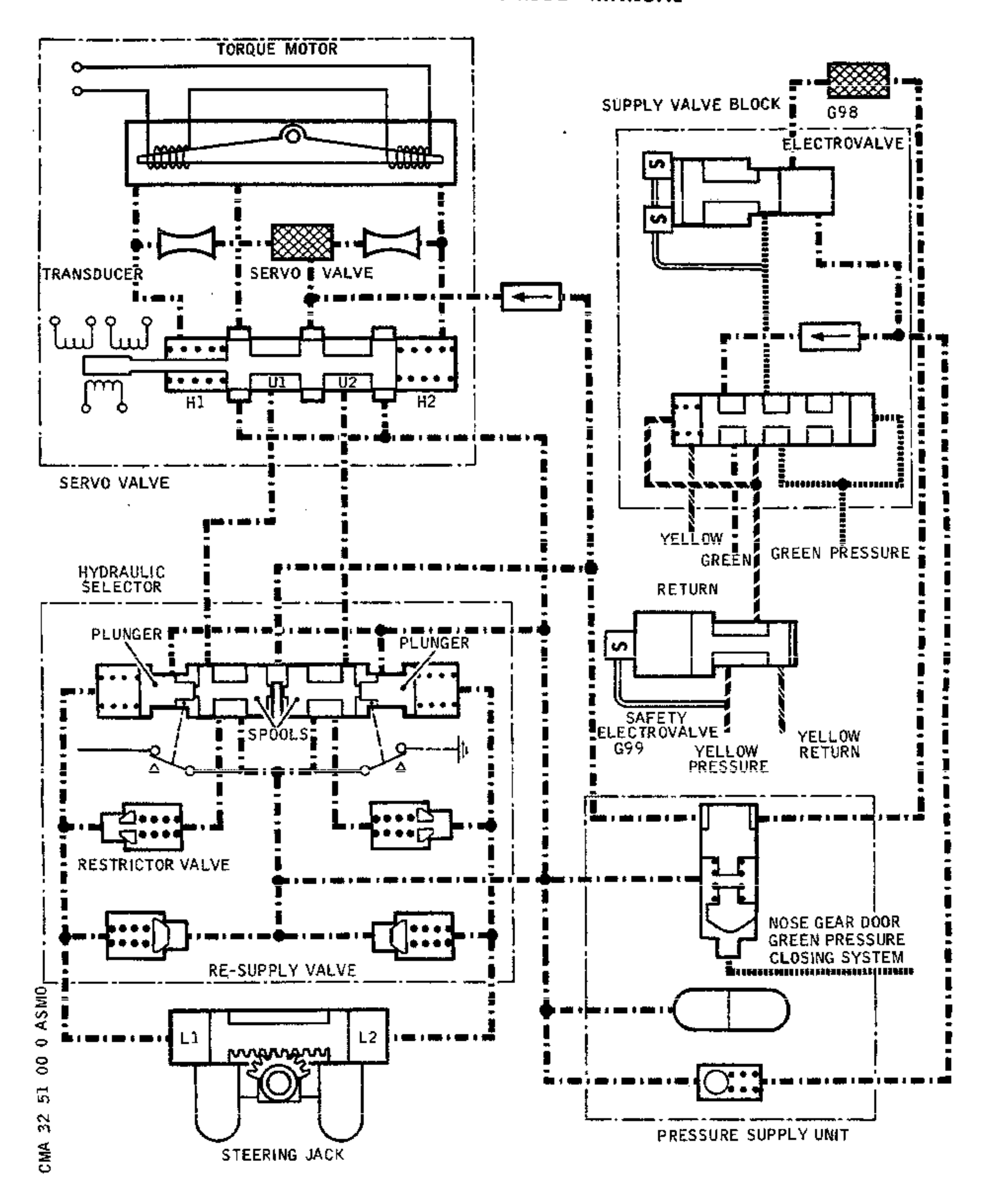
(c1) Jack chambers L1 and L2 are interconnected.

(c2) Jack chambers L1 and L2 are cut off from servo valve.

(d) Nose landing gear door Green system closing pressure is delivered to the system (pressure supply unit two-state valve).
R
R The pressure supply unit pressure relief valve maintains system pressure at 435 psi (30 bars).

(e) Both microswitches of hydraulic selector are closed.
R NOSE WHEEL warning lights and both STEERING warning lights illuminate.

(2) Both hydraulic selector restrictor valves serve as metering ports in the anti-shimmy system. When the fluid metering torque reaches the torque value corresponding with lateral skid of the wheel, the associated restrictor valve opens, therefore limiting the increase in damping torque. The opposite re-supply valve opens, thus filling the jack chamber with fluid and preventing cavitation.



R

Steering System Disconnected
Figure 011

5. Indicating (Ref. Fig.007 and 012)

R

R NOSE WHEEL and STEERING warning lights illuminated, indicate that the anti-shimmy system is operating while the steering system is disconnected.

A. Test

Two test operations, TEST 1 and TEST 2 must be accomplished to check steering system integrity.

(1) During each test the synchro detection channel and linear transducer signals are inhibited with only the 4° offset remaining.

(a) The decision logical comparator detects 4° of error and signals a fault.

R (a1) NOSE WHEEL and both STEERING warning lights illuminate.

R NOTE : Test 1 cuts off electrical supply to relay
R (K03),
R test 2 cuts off electrical supply to relay
R (K04).
This enables a check to be made of shut off of hydraulic supply by one and then the other solenoid of nose wheel steering supply valve block.

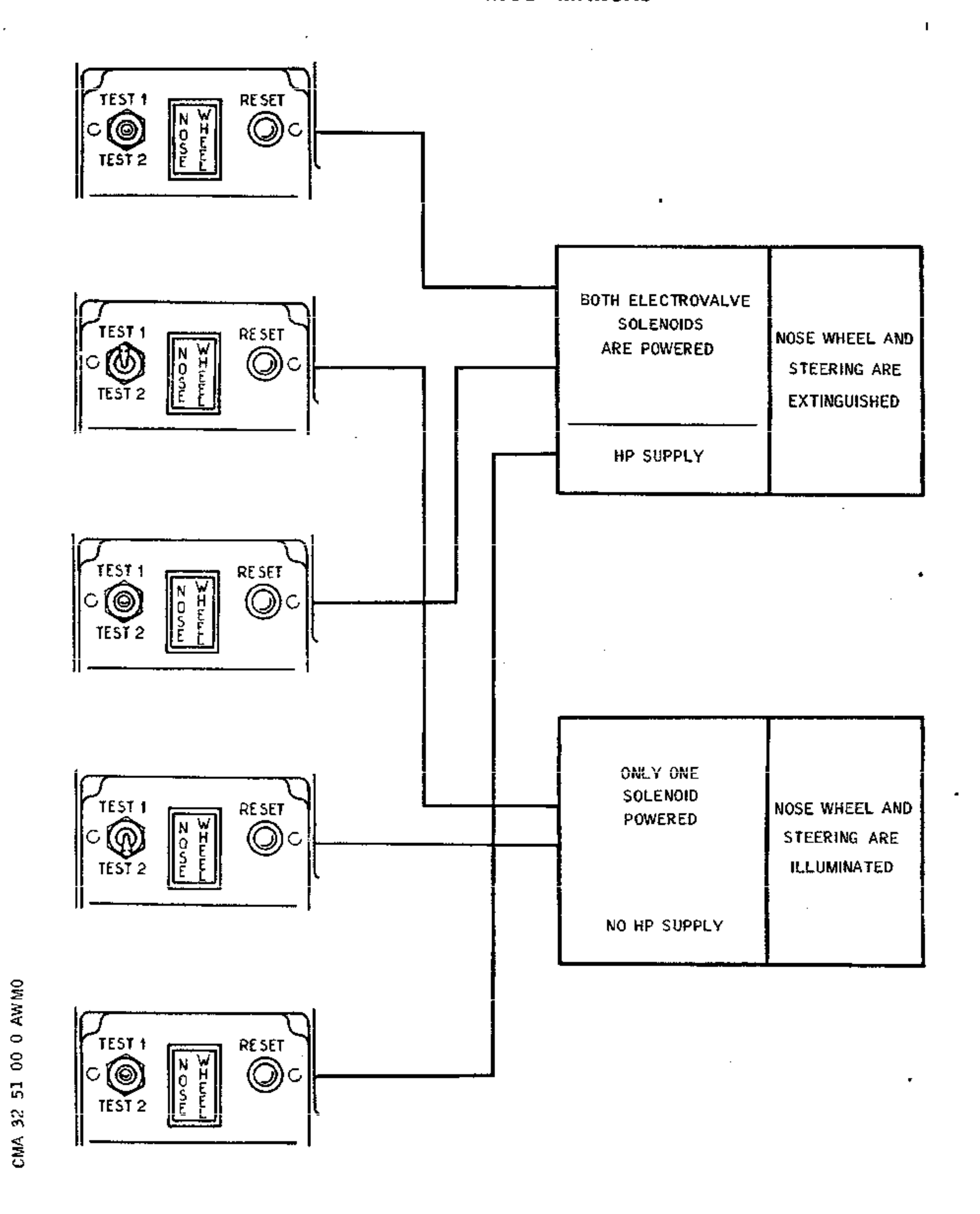
(2) After each test the steering system is automatically reset.

B. A RESET button enables the steering system to be reset after a fault has been detected.

C. On First Officer RH side console a three position TEST-Neutral-DIM switch when in hold-to-test position enables
R condition of lamps in STEERING warning light located on
R panel 3-212 and NOSE WHEEL warning light to be checked.
With switch in DIM position lamps are dimmed.

On Captain LH side console a three-position TEST-Neutral-DIM switch when in hold-to-test position enables condition
R of lamps in STEERING warning light located on panel 3-211 to be checked and dimmed when switch is placed in DIM position.

6. Electrical Power Supplies



Test on Ground or in Flight with Gear Extended
Figure 012

Nose wheel steering control and indicating circuits are supplied with 28 VDC power through bars 1P and 2P and with 26 Volts, 4oo Hz power through bar 12X.

SERVICE	BUS BAR	C/B PANEL
NOSE WHEEL STEERING IND.	A MAIN. 1P	15-215
NOSE WHEEL STEERING SUP.	B MAIN. 2P	15-216
NOSE WHEEL STEERING CONT.	A MAIN. 12X	13-215

STEERING - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN
R 24-00-00, SERVICING.

OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN
R 32-00-00, SERVICING.

1. General

R The following trouble shooting procedures are intended to enable
R faults found in the steering system to be quickly rectified.
R These procedures deal only with the hydraulic systems and indi-
R cating circuits.
R The defect can be isolated with the aid of the trouble shooting
R procedures and traced through OK and NOT OK paths to the appro-
R priate charts or other specified rectification action as may be
R necessary. If a defect occurs perform the appropriate rectifi-
R cation action, then repeat the operation at which the defect
R was encountered to ensure the operation is OK.

R Bracketed numbers in the procedures and charts indicate items on
R the component identification table (Ref. Table 101). The table
R provides information, including component location, required for
R rectification.

R All procedures dealing with trouble shooting are based on the
R assumption that electrical wiring is serviceable, all associated
R circuit breakers are set and electrical power is available,
R unless otherwise stated. Il the fault is not rectified check the
R wiring in accordance with the Wiring Diagram Manual (Ref. Table
R 101).

R 2. Prepare

R A. Equipment and Materials

DESCRIPTION	PART NO.
R Electrical Ground Power Unit	
R Jack - Shock Absorber Compression	1761/1

NOTE : Trouble shooting shall be carried out with aircraft in ground configuration, shock absorbers compressed.

R B. On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

R C. On centre console, make certain that brake control lever is in NORM position.

R D. Lift nose gear wheels clear of ground using tool 1761/1.

R E. Make certain that main landing gear wheel chocks are in position.

R F. Withdraw safety key C22127 from nose gear.

R G. Make certain that the following circuit breakers are set:

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
	LH UC WEIGHT SW "A" SYS SUP		G 292	M17
	RH UC WEIGHT SW "A" SYS SUP		G 295	M18
R	YELL L/LEVEL PFC & RELAY JACK "A" SYST CONT		C 288	P18
	YELL L/LEVEL PFC & RELAY JACK "B" SYST CONT	3-213	C 282	A 8
	LH UC WEIGHT SW "B" SYS SUP		G 293	B 8
	RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
R	NOSE U/C W/SW "B" SUP		G 296	D 8
	NOSE WHEEL STEERING CONT	13-215	G 91	D 8
	NOSE WHEEL STEERING IND	15-215	G 92	B 6
	NOSE WHEEL STEERING SUP	15-216	G 93	A18

R H. Make certain that the rudder pedals, the control handles and the nose gear wheels are in zero position.

R I. Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

3. Trouble Shooting

R

```
************************************
* Prepare steering system for trouble*
* shooting as described in paragraph *
* 2.                                 *
* Green and Yellow hydraulic systems *
* are depressurized.                 *
* Two STEERING indicator lights and  *
* NOSE WHEEL indicator light are on. *
* If :                               *
************************************
```

- NOT OK → Green and Yellow hydraulic systems depressurized. Controls in zero position. Two STEERING indicator lights and NOSE WHEEL indicator light are off. Ref. Chart 101
- OK ↓
- NOT OK → Green and Yellow hydraulic systems depressurized. Controls in zero position. Two STEERING indicator lights are off. NOSE WHEEL indicator light is on. Ref. Chart 102
- OK ↓
- NOT OK → Green and Yellow hydraulic systems depressurized. Controls in zero position. Two STEERING indicator lights are on. NOSE WHEEL indicator light is off. Ref. Chart 103
- OK ↓

```
          ||
*************************************
* Pressurize Green hydraulic system. *
* (Ref. 29-11-00, S).                *
* Place steering TEST switch of brake*
R * ANTI-SKID and NOSE WHEEL steering  *
* test indicator in TEST 1 or TEST 2 *
* position. Two STEERING indicator   *
* lights and NOSE WHEEL indicator    *
* light are on.  If :                *
*************************************
          ||              |
          ||              |            -----------------------------
          ||              |            | Green hydraulic system     |
          ||              |            | pressurized. Controls in   |
          OK          NOT OK-----------| zero position. Switch in   |
          ||                           | TEST 1 or TEST 2 position. |
          ||                           | Two STEERING indicator     |
          ||                           | lights and NOSE WHEEL in-  |
          ||                           | dicator light are off.     |
          ||                           | Ref. Chart 104             |
          ||                           -----------------------------
*************************************
* Depressurize Green hydraulic system*
* (Ref. 29-11-00, S).                *
* Pressurize Yellow hydraulic system *
* (Ref. 29-21-00, S).                *
* On SERVO CONTROLS overhead panel,  *
* press YELLOW LEVEL TEST push button*
* Two STEERING indicator lights and  *
* NOSE WHEEL indicator light are on. *
* If :                               *
*************************************
          ||              |            -----------------------------
          ||              |            | Yellow hydraulic system    |
          ||              |            | pressurized. Controls in   |
          ||              |            | zero position. YELLOW      |
          OK          NOT OK-----------| LEVEL TEST push button     |
          ||                           | pressed. Two STEERING in-  |
          ||                           | dicator lights and NOSE    |
          ||                           | WHEEL indicator light are  |
          ||                           | off.                       |
          ||                           | Ref. Chart 105             |
          ||                           -----------------------------
          ||
```

```
R           ||
   ************************************
R  * Depressurize Yellow hydraulic    *
R  * system (Ref. 29-21-00, S)        *
   * Pressurize Green hydraulic system *
   * (Ref. 29-11-00, S).               *
   * Operate control to steer right or *
   * left. Two STEERING indicator lights*
   * and NOSE WHEEL indicator light are *
   * off. If :                         *
   ************************************
            ||           |             ----------------------------
            ||           |            | After operation of         |
            ||           |            | steering control, STEERING |
            ||           |            | indicator lights and NOSE  |
            ||           |            | WHEEL indicator light come |
R           OK         NOT OK---------| on.                        |
R           ||                        | Ref. Chart 106             |
R           ||                         ----------------------------
R           ||
R           ||
   ************************************
   * Steering system is serviceable.  *
   ************************************
R           ||
R           ||
R           ||
R  ************************************
R  * Restore steering system to      *
R  * normal configuration             *
R  * Remove tool 1761/1               *
R  * Install safety key C22127        *
R  ************************************
```

```
    ************************************** ----------------------------
R   * GREEN AND YELLOW HYDRAULIC SYSTEMS * | GROUND EQUIPMENT REQUIRED|
R   * DEPRESSURIZED. CONTROLS IN ZERO    * ----------------------------
R   * POSITION. TWO STEERING INDICATOR   * | DESCRIPTION      PART NO|
R   * LIGHTS AND NOSE WHEEL INDICATOR    * |--------------------------|
R   * LIGHT ARE OFF.                     * | MULTIMETER               |
    ************************************** ----------------------------
    **************************************
    * Open access door 123AB             *
    * On relay box 3-123 plug UT 1838,   *
    * ground terminal 5B. Two STEERING   *
    * indicator lights and NOSE WHEEL    *
    * indicator light come on.           *
    **************************************
            ||             |             -----------------------------
            ||             |             | Replace nose wheel steer- |
           YES             NO------------| ing electronic unit G96   |
R           ||                           | [1]                       |
            ||                           -----------------------------
            ||                           -----------------------------
            ||                           | Replace nose wheel steer- |
            ||---------------------------| ing hydraulic selector G97|
R                                        | [2]                       |
                                         -----------------------------
```

Chart 101

```
    ************************************
R   * GREEN AND YELLOW HYDRAULIC SYSTEMS *
R   * DEPRESSURIZED. CONTROLS IN ZERO    *
R   * POSITION. TWO STEERING INDICATOR   *
R   * LIGHTS ARE OFF. NOSE WHEEL INDI-   *
R   * CATOR LIGHT IS ON.                 *
    ************************************
            ||                           -----------------------------
R           YES--------------------------| Replace relay G100 [3]     |
                                         -----------------------------
```

Chart 102

```
    ***********************************  ---------------------------
R   * GREEN AND YELLOW HYDRAULIC SYSTEMS *  | GROUND EQUIPMENT REQUIRED|
R   * DEPRESSURIZED. CONTROLS IN ZERO    *  ---------------------------
R   * POSITION. TWO STEERING INDICATOR   *  | DESCRIPTION       PART NO|
R   * LIGHTS ARE ON. NOSE WHEEL INDICATOR*  |-------------------------|
R   * LIGHT IS OFF.                      *  | MULTIMETER              |
    ***********************************  ---------------------------
    ***********************************
    * Open access door 123AB.            *
    * In relay box 3-213, check for      *
    * continuity between diode G101      *
    * terminals.                         *
    * There is continuity.               *
    ***********************************
            ||             |             ---------------------------
R          YES             NO------------| Replace diode G101 [4]  |
            ||                           ---------------------------
            ||                           ---------------------------
            ||                           | Replace brake ANTI-SKID  |
            ||---------------------------| and NOSE WHEEL steering  |
R                                        | test indicator G190 [5]. |
                                         ---------------------------
```

Chart 103

```
    ************************************  ----------------------------
R   * GREEN HYDRAULIC SYSTEM PRESSURIZED.* | GROUND EQUIPMENT REQUIRED|
R   * CONTROLS IN ZERO POSITION. SWITCH  * ----------------------------
R   * IN TEST 1 OR TEST 2 POSITION. TWO  * | DESCRIPTION       PART NO|
R   * STEERING INDICATOR LIGHTS AND NOSE * |--------------------------|
R   * WHEEL INDICATOR LIGHT ARE OFF.     * | MULTIMETER               |
    ************************************  ----------------------------
    ************************************
    * Depressurize Green hydraulic system*
    * (Ref. 29-11-00, S).                *
    * Disconnect plug G190A from test    *
    * indicator.                         *
    * On plug G190A measure voltage      *
    * between terminal A and ground.     *
    ************************************
            ||            |              ----------------------------
            ||            |             | Replace RH landing gear    |
R          28V            0V------------| downlocked relay G371 [6]  |
            ||                           ----------------------------
    ************************************
    * On test indicator G190 place switch*
    * in TEST 1 position.                *
    * Check for continuity between termi-*
    * nals A and d or Place switch in    *
    * TEST 2 position. Check for conti-  *
    * nuity between terminals h and U.   *
    ************************************
            ||            |              ----------------------------
            ||            |             | Replace brake ANTI-SKID    |
            ||            |             | and NOSE WHEEL steering    |
R          YES            NO------------| test indicator G190 [5]    |
            ||                           ----------------------------
            ||                           ----------------------------
            ||                          | Replace nose wheel steer-  |
            ||--------------------------| ing electronic unit G96    |
R                                       | [1]                        |
                                         ----------------------------
```

Chart 104

```
    ************************************* ------------------------------
R   * YELLOW HYDRAULIC SYSTEM PRESSURIZED* | GROUND EQUIPMENT REQUIRED|
R   * CONTROLS IN ZERO POSITION. YELLOW  * ------------------------------
R   * LEVEL TEST PUSH BUTTON PRESSED.    * | DESCRIPTION       PART NO|
R   * TWO STEERING INDICATOR LIGHTS AND  * |--------------------------|
R   * NOSE WHEEL INDICATOR LIGHT ARE OFF.* | MULTIMETER               |
    ************************************* ------------------------------
    *************************************
    * Open nose landing gear doors.      *
    * (Ref. 32-00-00, S).                *
    * Disconnect plug from safety elec-  *
    * trovalve G99.                      *
    * On SERVO CONTROLS overhead panel   *
    * press and hold YELLOW LEVEL TEST   *
    * push button.                       *
    * On plug G99A measure voltage       *
    * between terminals A and C.         *
    *************************************
            ||             |            ------------------------------
            ||             |            | Replace SERVO CONTROLS     |
R           28V            0V-----------| selector unit C291 [7]     |
            ||                          ------------------------------
            ||                          ------------------------------
            ||                          | Replace safety electro-    |
R           ||--------------------------| valve G99 [8]              |
                                        ------------------------------
```

Chart 105

```
    ************************************** ---------------------------
R   * AFTER OPERATION OF STEERING CONTROL* |GROUND EQUIPMENT REQUIRED |
R   * STEERING INDICATOR LIGHTS AND NOSE * ---------------------------
R   * WHEEL INDICATOR LIGHT COME ON      * |DESCRIPTION       PART NO |
R   ************************************** |--------------------------|
R                                          |MULTIMETER                |
                                           |                          |
R   ************************************** |SHUNT                     |
    * Wheels centred                     * ---------------------------
    * Pressurize Green hydraulic system  *
    * (Ref. 29-11-00, S)                 *
    * Press RESET push button            *
    * Nose wheels move slightly to right *
    * or left                            *
    **************************************
            ||             |              ----------------------------
            YES            NO------------| Ref. sheet 3               |
            ||                            ----------------------------
            ||
    **************************************
    * Disconnect steering selector elec- *
    * trical plug G97A                   *
    * Install an ammeter between terminal*
    * N and the corresponding terminal on*
    * selector G97                       *
    * Install an ammeter between terminal*
    * P and the corresponding terminal on*
    * selector G97                       *
    * Operate steering control to right  *
    * and left                           *
    * Each ammeter indicates a signal in *
    * accordance with steering order     *
    * given                              *
    **************************************
            ||             |              ----------------------------
            ||             |             |Replace steering selector  |
R           NO             YES-----------|G97 [2]                    |
            ||                            ----------------------------
            ||
            ||
            ||
            ||
            ||
            ||
            ||
            ||
            ||
```

Chart 106 (Sheet 1 of 6)

```
        ||
        ||
        NO
        ||
        ||
****************************************
* Disconnect electrical plug G96A on *
* electronic unit                      *
* On plug G96A shunt terminals 9 and *
* 17                                   *
* Check voltage between plug G96A     *
* terminals 1 and 3                    *
*                                      *
* Nose wheels centred and steering    *
* controls in zero position signal is*
* approximately zero                   *
* Signal increases in accordance with*
* action on steering control           *
****************************************
        ||              |               ------------------------------
        ||              |               |Replace electronic unit G96|
        NO              YES-------------|[1]                        |
        ||                              ------------------------------
        ||
****************************************
* Nose wheels centred and steering    *
* controls in zero position            *
* Disconnect electrical plugs on      *
* control unit G94                     *
* On plug G94A check voltage between *
* terminals A and B (20 volts)        *
* On plug G94B check voltage between *
* terminals A and C (0 volts)         *
****************************************
        ||              |               ------------------------------
        NO              YES-------------|Replace control unit G94   |
        ||                              |[9]                        |
        ||                              ------------------------------
        ||
        ||                              ------------------------------
        ||------------------------------|Replace monitoring unit G95|
                                        |[10]                       |
                                        ------------------------------
```

Chart 106 (Sheet 2 of 6)

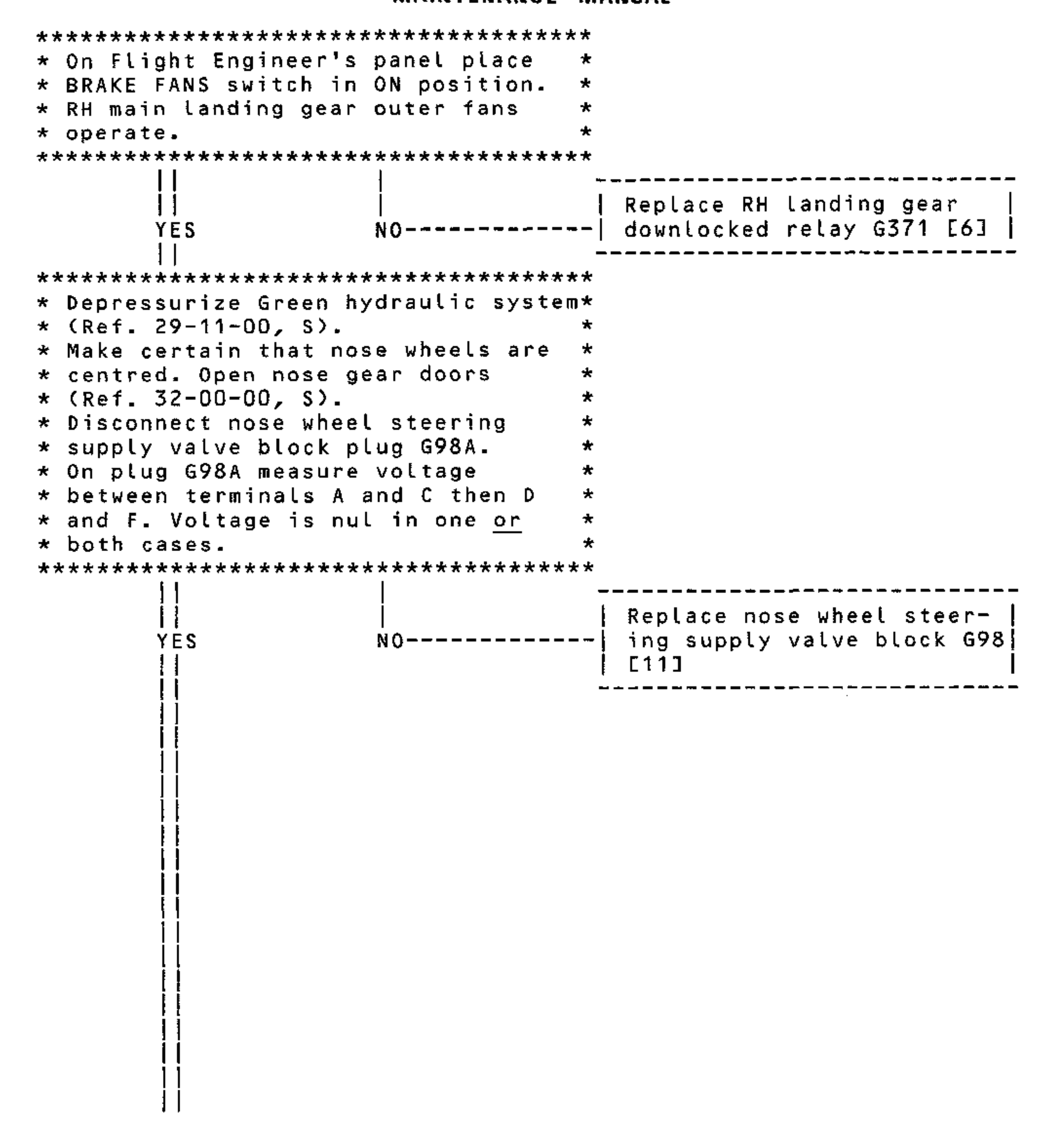


Chart 106 (Sheet 3 of 6)

```
**************************************
* On nose gear interphone box R75,   *
* disconnect plug R75A.              *
* On plug R75A measure voltage       *
* between terminal A and ground then *
* F and ground.                      *
* In one case only voltage = 0V      *
**************************************
        ||            |            ----------------------------
        ||            |           | Replace nose wheel steer- |
        NO            YES---------| ing electronic unit G96   |
        ||                        | [1]                       |
        ||                         ----------------------------
**************************************
* If in both cases voltage =         *
**************************************
        ||            |            ----------------------------
        ||            |           | Replace interphone box R75|
        0V            28V---------| microswitch [12]          |
        ||                         ----------------------------
        ||
        ||
```

Chart 106 (Sheet 4 of 6)

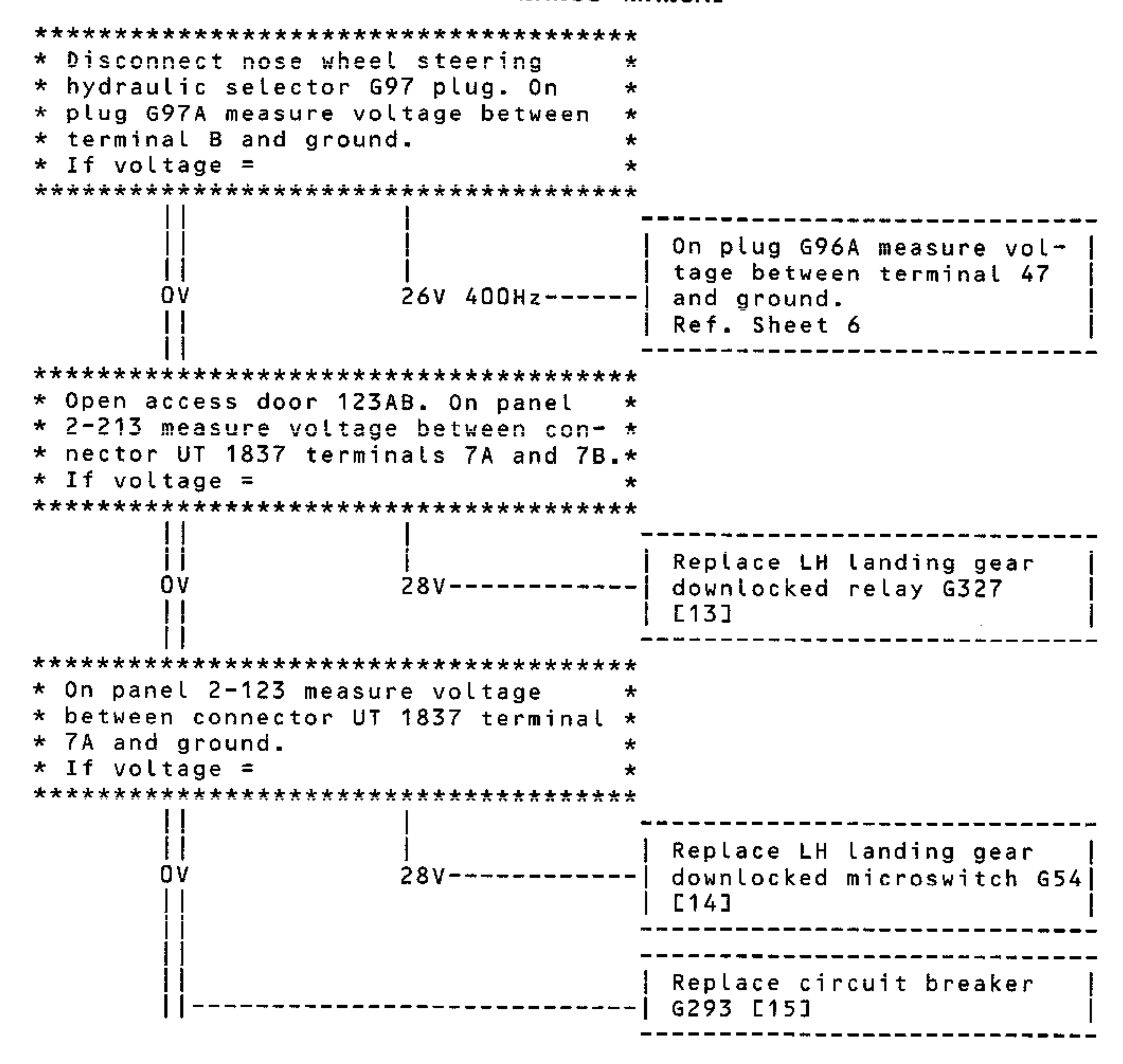


Chart 106 (Sheet 5 of 6)

```
**************************************
* On panel 10-215 disconnect plug    *
* G96A. On plug G96A measure voltage *
* between terminal 47 and ground.    *
* If voltage =                       *
**************************************
        ||              |              -----------------------------
        ||              |             | Replace circuit breaker     |
        28V             0V------------| G93 [16].                   |
        ||                             -----------------------------
**************************************
* On plug G96A shunt terminals 9 and *
* 17. Measure voltage between termi- *
* nals 35 and 33.                    *
* If voltage =                       *
**************************************
        ||              |              -----------------------------
        ||              |             | Replace nose wheel steer-   |
        1V              0V------------| ing electronic unit G96     |
        ||                            | [1]                         |
        ||                             -----------------------------
        ||                             -----------------------------
        ||                            | Replace nose wheel steer-   |
        ||----------------------------| ing selector G97 [2]        |
                                       -----------------------------
```

Chart 106 (Sheet 6 of 6)

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[1] Electronic unit		10-215	G96	LH electronics rack	32-51-32 R/I	32-51-01
[2] Nose wheel steering selector		715	G97	On nose landing gear leg	32-51-61 R/I	32-51-01
[3] Relay	123 AB	3-213	G100	Rack under floor	32-00-00 R/I	32-51-01
[4] Diode	123 AB	3-123	G101	Rack under floor		32-51-01
[5] Brake ANTI-SKID and NOSE WHEEL steering test indicator		2-212	G190	First Officer's instrument panel	32-43-56 R/I	32-51-01
[6] RH landing gear downlocked relay	123 AB	3-123	G371	Rack under floor	32-00-00 R/I	32-51-01 32-61-06
[7] SERVO CONTROLS unit		4-211	C291	On overhead panel	27-34-71 R/I	
[8] Safety electrovalve	711	127	G99	Nose landing gear bay	32-51-56 R/I	32-51-01
[9] Nosewheel steering control unit		211	G94	Under centre console between Captain and First Officer pedals	32-51-31 R/I	32-51-01
[10] Nosewheel monitoring unit		715	G95	On nose landing gear leg	32-51-33 R/I	32-51-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[11] Nosewheel steering supply valve block	711	127	G98	In nose landing gear bay	32-51-51 R/I	32-51-01
[12] Interphone box microswitch		715	R75	Interphone box on nose landing leg		
[13] LH landing gear downlocked relay	123 AB	2-123	G327	Rack under floor	32-00-00 R/I	32-51-01 32-61-06
[14] LH gear downlocked microswitch		733	G54	On LH main gear telescopic brace strut	32-31-28 R/I	32-61-06
[15] Circuit breaker		3-215	G293		24-50-00 R/I	32-61-06
[16] Circuit Breaker		15-216	G93		24-50-00 R/I	32-51-01

Component Identification
Table 101

STEERING - ADJUSTMENT/TEST

WARNING: MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

A. Resolver Setting

B. Mechanical Control Adjustment

C. Operational Test

D. Functional Test

E. System Test

2. Resolver Setting

A. Equipment and Materials

DESCRIPTION	PART NO.
Test Set-Zero Setting, Resolvers	TE3016000

RB NOTE 1: If Test Set Zero Setting, Resolvers, is not
RB available adjustment of steering may be carried out
RB I.A.W. MM.32-51-33 Page Block 500.

RB NOTE 2: After these adjustments it will be necessary to
RB carry out functional check Ref.32-51-00 para 2.D
RB sub-para (3). This sub-para makes Ref. to Para.5.

Jack-Shock Absorber Compression	1761/1
Rigging Pin - Nose Wheel Steering Mechanism	D925197000

DESCRIPTION	PART NO.
Wheel Chocks	
Circuit Breaker Safety Clips	
Lockwire - Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) On centre console, make certain that brake control lever is in NORM position.

(4) Depressurize Green and Yellow hydraulic systems. (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(5) Install tool 1761/1 under nose gear shock absorber jacking pad.

(a) Jack up nose gear wheels clear of ground.

(6) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	D 8
NOSE WHEEL STEERING CONT	13-215	G 91	D 8

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING IND	15-215	G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(7) Turn nose gear sliding tube so as to align the position mark on the rotating tube and the mark on the nose gear leg.

(8) In flight compartment, open access panels 212CS and 211DZ and install rigging pin D925197000 in cam of control unit mechanism.

(9) Disconnect both electrical plugs from nosewheel steering control unit (G94) located forward of centre console.

(10) Disconnect both electrical plugs from nosewheel monitoring unit (G95) located on nose gear.

(11) Connect monitoring unit (G95) receptacles and control unit (G94) receptacles to test set cable loom TE3016-201.

(12) Connect cable loom TE3016-201 to test set with cable TE3016-202.

(13) On test set TE3016000, place A.F.C.S. SENSORS NOSE WHEEL STEERING selector switch in 0 position and ON-OFF switch in OFF position.

(14) On test set TE3016000, place SCALE selector switch in 0 position. Place A.F.C.S. SENSORS NOSE WHEEL STEERING selector switch in N.W. STEERING 15 position (CX CT CONTROL).

(15) Connect test set to 28 VDC supply by means of cable loom provided.

C. Adjust

(1) On test set TE3016000, place ON-OFF switch in ON position.

(a) On test set TE3016000, the three warning lights come on.

(2) On test set TE3016000, place SCALE selector switch on 15°.

(a) The indicator pointer is in zero position.

(3) On test set TE3016000, select successively the other sensitivities, 3°, then 15' then 3' (Make certain that at each operation 0 is shown before selecting next sensitivity).

(a) On this last sensitivity, the indicator pointer must be within a range of ± 2' about zero.

(4) If the results obtained are out of tolerance, the following setting procedure will be applied :

(a) On test set, place SCALE selector switch in 0 position.

(b) Remove the resolver case from monitoring unit (G95) (Zone 715).

(c) Cut and remove lockwire and loosen the resolver attaching screws.

(d) Repeat previous adjustments, turning the resolver body in order to obtain 0 at each sensitivity selected.

(e) When zero is obtained to within the ± 2' tolerance, tighten and wirelock attaching screws of DETECTION resolver body.

(f) Check on test set TE3016000, that the resolver zero is still within tolerance ± 2' in the A.F.C.C. SENSORS NOSE WHEEL STEERING selector switch N.W. STEERING 15 position.

(g) Replace resolver case, install screws and safety with lockwire (Ref. 20-21-13).

(h) On test set TE3016000, place switch in OFF position. The three warning lights go off.

(5) Disconnect test set TE3016000.

(6) Connect electrical plugs to the monitoring unit.

(7) Connect electrical plugs to the control unit.

D. Close-Up

(1) Remove rigging pin D925197000.

(2) Remove safety clips and tags and reset circuit breakers.

(3) Carry out a functional test (Ref. paragraph 5).

(4) Remove jack 1761/1.

(5) Close access doors.

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3. Mechanical Control Adjustment

A. Equipment and Materials

DESCRIPTION	PART NO.
Rigging Pin - Nose Wheel Steering Mechanism	D925197000
Rigging Pin - Yaw Shaft	D925357000
R R Nose Wheel Steering Setting Equipment	E925151000
Access Platform 3.67 m (12 ft.)	
Circuit Breaker Safety Clips	
Lockwire - Dia. 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	
R Clinometer	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

R (2) Make certain that droop nose is downlocked.

R (3) Position access platform.

R (4) Depressurize Green and Yellow hydraulic systems. (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(5) Open access door 113DB, under droop nose, and access door 121AB.

R R R (6) In flight compartment, open access panels 212CS, 211DZ, 211GS, 212GS and remove steering control handle mechanism covers.

R R (7) Remove steering control handles from splined shafts and install setting equipment D925151000.

R (8) On overhead panel, on flight controls unit, make certain that the GREEN INVERTER and BLUE INVERTER selector switches are in PWR OFF position.

R R (9) Make certain that rudder trim control is in zero

position.

R (10) Display a warning notice in the flight compartment.

(11) Rig the steering control using rigging pin D925357000.

C. Adjust (Ref. Fig. 501)

R (1) Disconnect spring rod (11) from yaw shaft ; nut (7), washer (8) and pin assembly (6).

R (2) Using clinometer position setting equipment D925151000 perpendicular to aircraft floor datum and position index to 0° position on graduated scale.

R (3) Position clinometer on vertical rod (30) and check that angle does not change throughout full range of movement. If necessary adjust length of rod (30) as follows :

R (a) Cut lockwire and unscrew nuts (16) until washers (14) (15) can rotate independently of each other.

R (b) Turn rod body to achieve required length.

R (c) Position washers (14) (15), tighten nuts (16) and safety with lockwire (Ref. 20-21-13).

R (4) Adjust steering control handle travel.

R NOTE : Make certain that stops of control handle not being adjusted do not interfere with adjustment.

R (a) Install rigging pin D925197000 in steering control unit cam mechanism.

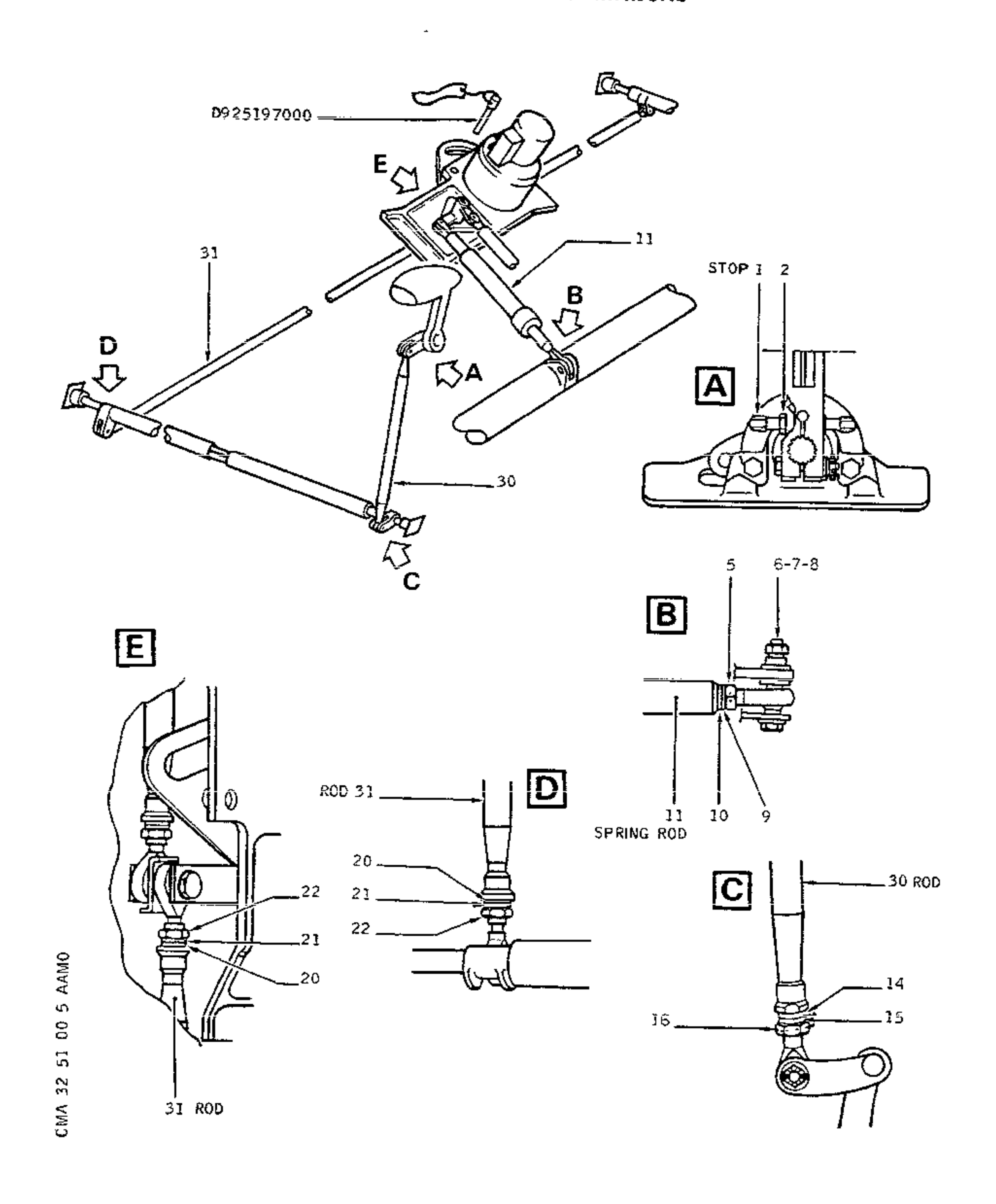
R (b) Make certain that setting equipment D925151000 is aligned at 0.

R (c) If necessary adjust length of rods (31) as follows :

R (c1) Cut lockwire and unscrew nuts (22) until washers (20) (21) can rotate independently of each other.

R (c2) Turn rod body to achieve required length.

R (c3) Position washers (20) (21), tighten nuts (22) and safety with lockwire (Ref. 20-21-13).



R

Mechanical Control Adjustment
Figure 501

(d) Remove rigging pin D925197000.

(e) Operate setting equipment D925151000 lever to right then left.
Lever travel should be 60 ± 3° to either side of 0
If necessary adjust stops (1) as follows :

(e1) Cut lockwire, back off locknut (2).

(e2) Turn stop (1) to achieve required length.

(e3) Tighten locknut (2) and safety with lockwire (Ref. 20-21-13).

(5) Carry out same operations for other control handle.

(6) Install rigging pin D925197000.

(7) Connect spring rod (11) to yaw shaft.
If necessary adjust length of rod as follows, to permit installation of pin assembly (6) :

(a) Cut lockwire and loosen locknut (5) until lock washers (9) (10) can rotate independently of each other.

(b) Rotate rod (11) end-fitting to achieve required rod length.

(c) Position lock washers (9) (10), tighten locknut (5).
Torque nut (5) to between 48 and 53 lbf.in. (0.54 and 0.59 m.daN) and safety with lockwire (Ref. 20-21-13).

(8) Remove rigging pins D925357000, D925197000 and setting equipment D925151000.

(9) Install steering control handle and steering control mechanism covers.

D. Close-Up

(1) Close access doors.

(2) Remove access platform.

4. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Make certain that the following circuit breakers are reset.

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
	NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
	LH UC WEIGHT SW "A" SYS SUP		G 292	M17
R	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
	YELL LL PFC & RELAY JACK "A" SYS CONT		C 288	P18
	YELL L/LEVEL PFC & RELAY JACK "B" SYS CONT	3-213	C 282	A 8
R	LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		G 293	B 8
	RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
	NOSE U/C W/SW "B" SUP		G 296	D 8
	NOSE WHEEL STEERING CONT	13-215	G 91	D 8
	NOSE WHEEL STEERING IND	15-215	G 92	B 6
	PLTS LT TEST SUP		L1001	E14
	NOSE WHEEL STEERING SUP	15-216	G 93	A18

(3) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(4) Make certain that the rudder pedals, the control handles and the nose gear wheels are in zero position.

(5) Remove safety key C22646 from interphone box located on nose gear leg.

(6) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

R C. Warning Light Test

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

(1) On First Officer's RH side console, place D/B LIGHT selector switch in TEST position, and hold.

R (a) On brake ANTI-SKID and NOSE WHEEL steering test
R indicator (G190), NOSE WHEEL warning light located on the First Officer's instrument panel,
R and STEERING warning light located on panel 3-212 come on.

(2) Release selector switch.

R (a) NOSE WHEEL and STEERING warning lights go off.

(3) On Captain's LH side console, place D/B LIGHT selector switch in TEST position, and hold.

R (a) STEERING warning light located on panel 3-211 comes on.

(4) Release selector switch.

R (a) STEERING warning light goes off.

D. Steering System Test

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

(1) Test 1

R (a) On NOSE WHEEL steering test indicator (G190), located on First Officer's instrument panel, place TEST 1/TEST 2 selector switch in TEST 1 position, and hold.

R (a1) On NOSE WHEEL steering test indicator (G190),
R NOSE WHEEL warning light comes, on as well

R as both STEERING warning lights located
respectively on panels 3-211 and 3-212.

(b) Release selector switch.

R (b1) NOSE WHEEL warning light and both STEERING
R warning lights go off.

(2) Test 2

R (a) On NOSE WHEEL steering test indicator (G190), place TEST 1/TEST 2 selector switch in TEST 2 position and hold.

R (a1) NOSE WHEEL warning light and both STEERING
R warning lights come on.

(b) Release selector switch.

R (b1) NOSE WHEEL warning light and both STEERING
R warning lights go off.

(3) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

E. Safety Electrovalve Test

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

(1) Pressurize Yellow Hydraulic System (Ref. 29-21-00, Servicing).

NOTE : Green System must not be pressurized.

R (2) On NOSE WHEEL steering test indicator (G190), NOSE
R WHEEL warning light located on First Officer's ins-
R trument panel is off, as well as both STEERING warning
lights located respectively on panel 3-211 and
and panel 3-212.

(3) On SERVO CONTROLS overhead panel, press YELLOW LEVEL TEST push-to-test button.

R (a) NOSE WHEEL warning light as well as both
R STEERING warning lights come on.

(4) Release push-to-test button.

R (a) NOSE WHEEL warning light as well as both
R STEERING warning lights go off.

(5) Shut-down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

F. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Install safety key C22646.

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5. Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power unit	
Jack-Shock Absorber Compression	1761/1
Wheel Chocks	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheel chocks.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) On centre console, make certain that brake control lever is in NORM position.

(5) Install jack 1761/1 under nose gear shock absorber jacking pad.

(a) Jack up wheels clear of ground.

(6) Remove safety key C22646 from interphone box located on nose gear.

(7) Make certain that the following circuit breakers are reset.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
R RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
YELL LL PFC & RELAY JACK "A" SYS CONT		C 288	P18

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
YELL L/LEVEL PFC & RELAY JACK "B" SYS CONT	3-213	C 282	A 8
R RH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	D 8
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
PLTS LT TEST SUP		L1001	E14
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(8) Connect electrical ground power unit and energize the aircraft electrical network. (Ref. 24-41-00, Servicing)

C. Steering System Test

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On NOSE WHEEL steering test indicator (G190), located on First Officer's instrument panel, place TEST 1/TEST 2 selector switch in TEST 1 position and release.

(a) On NOSE WHEEL steering test indicator (G 190), NOSE WHEEL warning light as well as both STEERING warning lights located respectively on panel 3-211 and panel 3-212, come on during the pulse on TEST 1 position.

(3) Place TEST 1/TEST 2 selector switch in TEST 2 position and release.

(a) NOSE WHEEL warning light and both STEERING warning lights come on during the pulse on TEST 2 position.

(4) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Steering System Test

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

MAKE CERTAIN THAT RUDDER TRAVEL RANGE IS CLEAR.

(1) Pressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

R (2) From rudder pedal, give a steering order to right then to left.

(a) Nose gear wheels move in conformity with the order given.

(3) From steering control handle, give a steering order
R to right then to left.

(a) Nose gear wheels move in conformity with order given.

R (4) On NOSE WHEEL steering test indicator (G190), located on First Officer instrument panel, place TEST 1/TEST 2 selector switch in TEST 1 position and hold.

R (a) On NOSE WHEEL steering test indicator (G190), NOSE
R WHEEL warning light and both STEERING warning lights located respectively on panel 3-211 and panel 3-212 come on.

(b) From steering control handle, give a steering order to right or to left.

(b1) Nose gear wheels do not move.

R (5) Release TEST 1/TEST 2 selector switch.

R (a) NOSE WHEEL warning light and both STEERING
R warning lights go off.

(b) From steering control handle, give a steering order to right or to left.

(b1) Nose gear wheels move in conformity with the order given.

(6) Place TEST 1/TEST 2 selector switch in TEST 2 position and hold.

R (a) NOSE WHEEL warning light and STEERING warning

R lights come on.

(b) From steering control handle, give a steering order to right or to left.

(b1) Nose gear wheels do not move.

(7) Release TEST 1/TEST 2 selector switch.

R (a) NOSE WHEEL warning lights and both STEERING
R warning lights go off.

(b) From steering control handle, give a steering order to right or to left.

(b1) Nose gear wheels move in conformity with order given.

(8) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) From steering control handle, give a steering order to right or to left.

(a) Nose gear wheels move in conformity with order given.

(11) On SERVO CONTROLS overhead panel, press and hold YELLOW LEVEL TEST push-button.

R (a) NOSE WHEEL warning light and both STEERING
R warning lights come on.

(12) From steering control handle, give a steering order to right or to left.

(a) Nose gear wheels do not move.

(13) Release YELLOW LEVEL TEST push-button.

R (a) NOSE WHEEL warning light and both STEERING
R warning lights remain on.

(14) From steering control handle, give a steering order to right or to left.

(a) Nose gear wheels do not move.

R (15) On NOSE WHEEL steering test indicator (G190), press RESET push-button.

R (a) NOSE WHEEL and STEERING warning lights go off.

(16) From steering control handle, give a steering order to right or to left.

(a) Nose gear wheels move in conformity with steering order given.

(17) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

E. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

R (2) Remove jack 1761/1.

(3) Install safety key C22646.

6. System Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Jack-Shock Absorber Compression	1761/1
Safety Sleeve - Nose Landing Gear Doors	E92500200
**ON A/C ALL	
Graduated Quadrant - Nose Landing Gear	D924330000
Graduated Quadrant Assy - Travel Range Measurement - LH Nose Wheel Steering Control Handle	E920127000
Graduated Quadrant Assy - Travel Range Measurement - RH Nose Wheel Steering Control Handle	E920127001
Wheel Chocks	
Multimeter	
Dynamometer : 0 to 20 daN (0 to 45 lbf)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Position wheels chocks.

(3) On centre console, make certain that brake control lever is in NORM position.

(4) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(5) Position jack 1761/1 under nose gear shock absorber.

(a) Jack up wheels clear of ground.

(6) Remove safety key C22646 from interphone box on nose gear leg.

(7) Install tools E920127000, E920127001 and D924330000.

(8) Make certain that the following circuit breakers are reset :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
YELL LL PFC & RELAY JACK "A" SYS CONT		G 288	P18
YELL L/LEVEL PFC & RELAY JACK "B" SYS CONT	3-213	G 282	A 8
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP		G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	D 8
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
PLTS LT TEST SUP		L1001	E14
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(9) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Check Nosewheel Steering Supply Valve Block Electrical Supply

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

MAKE CERTAIN THAT WHEEL AND RUDDER TRAVEL RANGES ARE CLEAR.

(1) Make certain that the visor is not uplocked.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(3) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(4) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Install safety sleeves on door actuating jacks.

(8) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
NOSE U/C W/SW "A" SUP	3-213	G 296	D 8
NOSE WHEEL STEERING SUP	15-215	G 93	A18

(9) In nose gear bay, disconnect nosewheel steering supply valve block (G98) electrical plug (G98A).

(10) Remove safety clip and tag and reset circuit breaker G93.

NOTE : If the check is to be carried out after towing,

press the RESET pushbutton on NOSE WHEEL steering test indicator (G190) to reset the safety circuit.

(11) Make certain that voltage is nul between plug (G98A) terminals A and C then D and F.

(12) Remove safety clips and tags and reset circuit breakers G291 and G296.

(13) On First Officer's instrument panel, on NOSE SHEEL steering test indicator (G190), place TEST 1/TEST 2 selector switch in TEST 1 position then release.

(a) On plug (G98A) voltage between terminals A and C remains nul during the pulse on TEST 1 position.

(14) Place TEST 1/TEST 2 selector switch in TEST 2 position then release.

(a) On plug (G98A) voltage between terminals D and F remains nul during the pulse on TEST 2 position.

(15) Trip, safety and tag circuit breaker G93.

(16) In nose gear bay connect nose wheel steering supply valve block (G98) plug (G98A).

(17) Remove safety clip and tag and reset circuit breaker G93.

(18) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(a) On NOSE WHEEL steering test indicator (G190), NOSE WHEEL warning light located on First Officer's instrument panel and both STEERING warning lights located respectively on panel 3-211 and panel 3-212 are off.

(19) Trip, safety and tag circuit breaker G291 (Relays in Flight position).

(20) Operate steering control.

(a) The wheels move in conformity with steering order given.

(21) Trip, safety and tag circuit breaker G296 (Relays in Flight position).

(22) Operate steering control.

(a) The wheels do not move.

(23) Remove safety clip and tag and reset circuit breaker G291 (Relays in Ground position).

(24) On NOSE WHEEL steering test indicator (G190) press RESET pushbutton.

(25) Operate steering control.

(a) The wheels move in conformity with steering order given.

(26) Remove safety clip and tag and reset circuit breaker G296 (Relays in Ground Position).

(27) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(28) Remove safety sleeves from door actuating jacks.

(29) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(30) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(31) Close gear doors by operating handle located on nose gear leg. Install locking cap.

(32) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(33) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

D. Check of Relays Connected with the RH and LH Main Landing Gear

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

MAKE CERTAIN THAT WHEEL AND RUDDER TRAVEL RANGES ARE CLEAR.

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Relay G371 (RH main landing gear).

(a) Trip, safety and tag the following circuit breaker (Gear extended, not downlocked).

	SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R	RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP	1-213	G 295	M18

(a1) On NOSE WHEEL steering test indicator (G190), WHEEL warning light located on First Officer's instrument panel, and both STEERING warning lights located respectively on panel 3-211 and panel 3-212, come on (nosewheel steering supply valve block (G98) is no longer supplied).

(b) Remove safety clip and tag and reset circuit breaker G295 (Gear extended and downlocked).

(b1) NOSE WHEEL warning light and both STEERING warning lights remain on.

(c) On NOSE WHEEL steering test indicator (G190) press then release RESET pushbutton.

(c1) NOSE WHEEL warning light and both STEERING warning lights go off.

(3) Relay G327 (LH main landing gear).

(a) Trip, safety and tag the following circuit breaker (Gear extended, not downlocked).

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
R R LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8

(a1) NOSE WHEEL warning light and both STEERING warning lights come on (26 V, 400 Hz is cut off).

(b) Remove safety clip and tag and reset circuit breaker G293 (Gear downlocked).

(b1) NOSE WHEEL warning light and both STEERING warning lights remain on.

(c) Press then release RESET pushbutton.

(c1) NOSE WHEEL warning light and both STEERING warning lights go off.

(4) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

E. Test of Nosewheel Steering Supply Valve Block (G98)

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

MAKE CERTAIN THAT WHEEL AND RUDDER TRAVEL RANGES ARE CLEAR.

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) From steering control handle, give a steering order to left or to right.

(a) Nose gear wheels move in conformity with order given.

(b) On NOSE WHEEL steering test indicator (G190), NOSE WHEEL warning light located on First Officer's instrument panel, and both STEERING warning lights located respectively on panel 3-211 and panel 3-212 are off.

(3) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(4) From steering control handle, give a steering order to left or to right.

(a) NOSE WHEEL warning light and both STEERING warning lights are off.

(b) Nose gear wheels move in conformity with order given.

(5) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(6) From steering control handle, give a steering order to left or to right.

(a) NOSE WHEEL warning light and both STEERING warning lights are off.

(b) Nose gear wheels move in conformity with order given.

(7) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

R F. Test of Safety Electrovalve (G99)

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

MAKE CERTAIN THAT WHEEL AND RUDDER TRAVEL RANGES ARE CLEAR.

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) From steering control handle, give a steering order to left or to right.

(a) Nose gear wheels move in conformity with order given.

R (b) On NOSE WHEEL steering test indicator (G190), NOSE
R WHEEL warning light located on First Officer's
R instrument panel, and both STEERING warning lights located respectively on panel 3-211 and panel 3-212 are off.

(3) On SERVO CONTROLS overhead panel, press and hold YELLOW LEVEL TEST push-to-test button.

R (a) NOSE WHEEL warning light and both STEERING
R warning lights come on.

(b) From steering control handle, give a steering order to left or to right.

(b1) Nose gear wheels do not move.

(4) Release YELLOW LEVEL TEST push-to-test button.

R (5) On NOSE WHEEL steering test indicator (G190), press RESET push-button.

R (a) NOSE WHEEL warning light and both STEERING
R warning lights go off.

(6) From steering control handle, give a steering order to left or to right.

(a) Nose gear wheels move in conformity with order given.

(7) Shut down and depressurize Yellow hydraulic system
R (Ref. 29-21-00, Servicing).

R G. Test of Nose Gear Wheel Steering by Means of Captain Rudder
R Pedals

R WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS AND THE WHEELS
R ARE IN ZERO POSITION.

MAKE CERTAIN THAT WHEEL AND RUDDER TRAVEL RANGES ARE CLEAR.

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) On NOSE WHEEL steering test indicator (G190), NOSE WHEEL warning light located on Fist Officer's instrument panel and both STEERING warning lights located respectively on panel 3-211 and panel 3-212 are off.

R (3) Using rudder pedal, steer maximum right.

R (a) Nose gear wheels are positioned at 10 ± 2° turn to right (tool D924330000).

(b) NOSE WHEEL warning light and both STEERING warning lights are off.

R (4) Slowly release rudder pedal to neutral position.

R (a) On tool D924330000, note position of wheels when
R rudder pedal is at neutral.

R (b) NOSE WHEEL warning light and both STEERING warning lights are off.

R (5) Using rudder pedal, steer maximum left.

R (a) Nose gear wheels are positioned at 10 ± 2° turn
R to left (tool D924330000).

(b) NOSE WHEEL warning light and both STEERING warning lights are off.

R (6) Slowly release rudder pedal to neutral position.

R (a) On tool D924330000, note position of wheels when
R rudder pedal is at neutral.

R (b) On tool D924330000, deviation, when rudder pedals
R are at neutral, should not exceed 1°.

R (7) Shut down and depressurize Green hydraulic system. (Ref. 29-11-00, Servicing).

R H. Test of Nose Gear Wheel Steering by Means of Control Handles

R WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS AND THE WHEELS
R ARE IN ZERO POSITION.

(1) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(2) Position Captain's steering control handle in fully right position.

(a) Captain's and First Officer's steering control
R handles are at 60 ± 3° turn to right.

R (b) Nose gear wheels are at 60 + 1°30', -2°. turn to
R right.

(c) NOSE WHEEL warning light and both STEERING warning lights are off.

R (3) Slowly release Captain's control handle to neutral
R position.

R (a) On tools D924330000 and D920127000, 001, note
R position corresponding to control handle neutral
R position.

R (b) NOSE WHEEL warning light and both STEERING war-
R ning lights are off.

R (4) Position Captain's steering control handle in fully
R left position.

R (a) Captain's and First Officer's steering control
R handles are at 60 ± 3°, turn to left.

R (b) Nose gear wheels are at 60 ± 1° 30', -2° turn to
R left.

R (c) NOSE WHEEL warning light and both STEERING war-
R ning lights are off.

R (5) Slowly release Captain's control handle to neutral
R position.

R (a) On tools D924330000 and D920127000, 001, note
R position corresponding to control handle neutral
R position.

R (b) On tool D924330000, deviation when control handle

R is in neutral position should not exceed 1°.

R (c) On tools D920127000, 001, deviation when control
R handle is in neutral position should not exceed
R 4°.

R (d) NOSE WHEEL warning light and both STEERING war-
R ning lights are off.

R (6) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

I. Load at Captain's Steering Control Handle

R (1) Using a dynamometer installed on tool D920127000,
R note load required to operate control handle ± 40°.

R This load should be between 3.5 and 6 daN (7.90 and
R 13.5 lbf.).

R (2) Using rudder pedal steer maximum left or right (rudder
R deflected 30°) and note load required to operate con-
R trol handle over complete travel range (± 60°).

R This load should be less than 9 daN (20.20 lbf.).

R (3) Carry out same operations with rudder deflected to
R opposite side.

R J. Operating Time

R (1) Pressurize Green hydraulic system (Ref. 29-11-00,
R Servicing).

R (2) Using steering control handle steer full left, full
R right then return control handle to 0 position.

R Operating time should be between 6 and 7.5 seconds.

R (3) Shut down and depressurize Green hydraulic system
R (Ref. 29-11-00, Servicing).

R K. Close-Up

(1) Remove tools E920127000, E920127001 and D924430000.

(2) Remove jack 1761/1.

(3) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(4) Disconnect hydraulic ground power unit.

(5) Install safety key C22646.

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END OF THIS SECTION

NEXT

NOSEWHEEL STEERING CONTROL UNIT - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS. CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The nosewheel steering control unit (G 94) is located in the flight compartment forward of the centre console. The nosewheel steering unit receives mechanically transmitted orders from the pedals and steering control handles and transmits them electrically to the nose gear steering system.

2. Nosewheel Steering Control Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Rigging Pin - Nosewheel Steering Mechanism	D925197000
Lockwire Dia. 0.70 mm (0.028 in) (Corrosion Resistant Steel)	
Circuit Breaker Safety Clips	
Removable Chocks	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On overhead panel, on flight controls unit, make certain that the BLUE INVERTER and GREEN INVERTER switches are in PWR OFF position.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
PFCS INV GRN FAIL IND	1-213	1C 73	M15
PFCS INV GRN SUP	1-213	1C 66	P11
PFCS INV BLUE SUP	5-213	2C 66	B14
PFCS INV BLUE FAIL IND	5-213	2C 73	E11
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(4) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing)

(5) Make certain that rudder trim control is in zero position.

(6) Remove RH pedal at Captain's station and LH pedal at First Officer's station (Ref. 27-21-11, Removal/Installation).

(7) Remove access panels 211 CS, 212 CS, 211 DZ and 211 EZ.

(8) Install rigging pin D925197000 in steering cam mechanism.

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical plugs

(2) Cut lockwire and remove screws (1). Remove control unit.

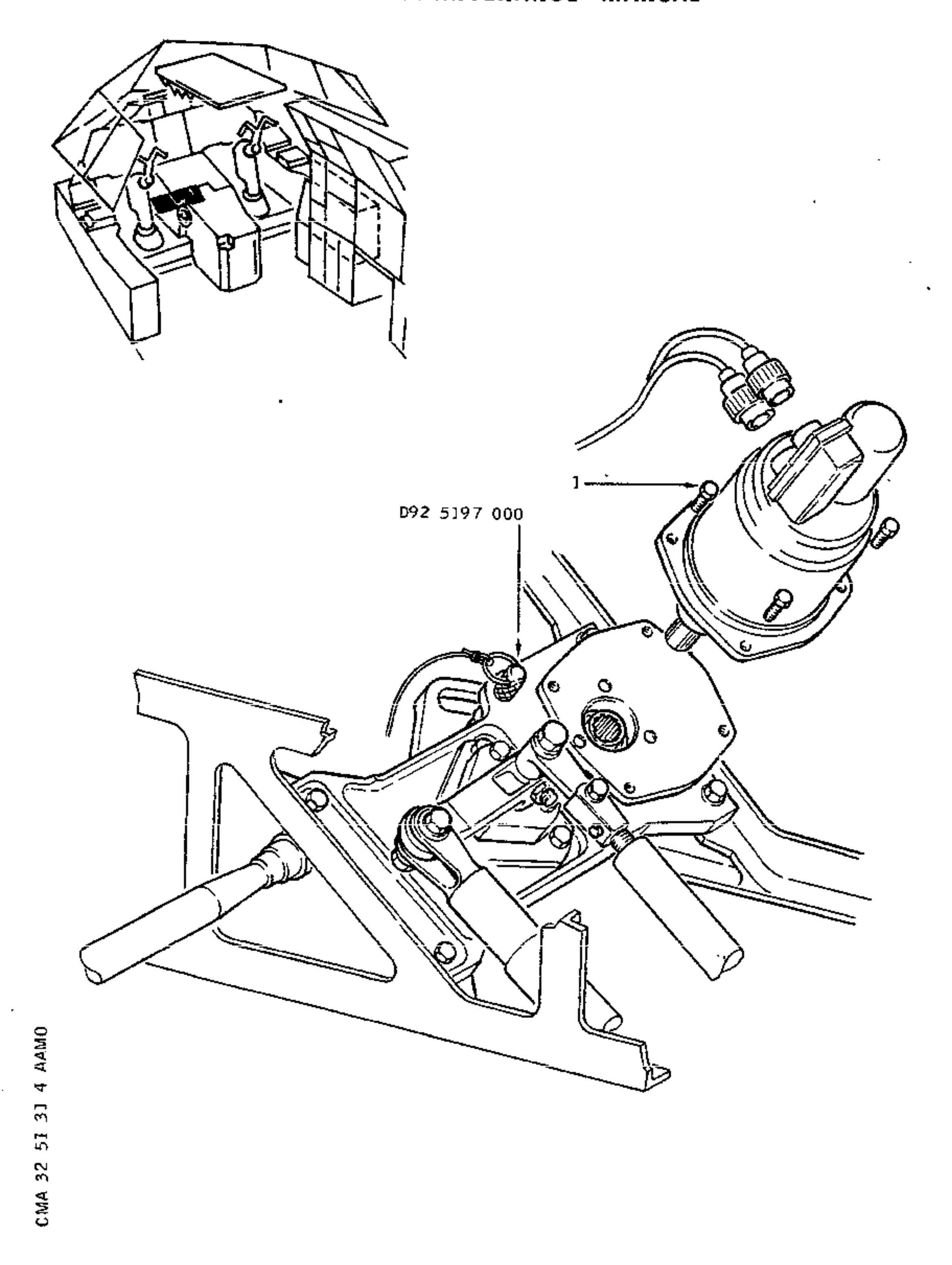
D. Preparation of Replacement Component.

Not applicable.

E. Install

(1) Position control unit with electrical connectors facing forward.

<u>NOTE</u> : The control unit and cam mechanism grooves and splines are so arranged as to ensure correct po-



R Nosewheel Steering Control Unit
Figure 401

sitioning of control unit.

(2) Secure the control unit with screws (1). Torque screws to between 40 and 45 lbf. in. (0.452 and 0.508 m.daN). Wirelock screws (1).

(3) Remove rigging pin D925197000

(4) Connect electrical plugs.

(5) Remove safety clips and tags and reset circuit breakers

F. Test

Adjust resolvers using tool TE3016 (Ref. 32-51-00, Adjustment/Test). OR-Adjust resolvers without using tool TE3016 (Ref. 32-51-31, Adjustment/Test).

G. Close-Up.

(1) Make certain that the working area is clean and clear of tools and miscellaneous items of equipment.

(2) Install pedals (Ref. 27-21-11, Removal/Installation).

(3) Install access panels 211 EZ, 211 DZ, 211 CS and 212 CS

NOSE WHEEL STEERING CONTROL UNIT - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The procedure described in this topic is an alternative procedure for adjusting the steering system following replacement of the nosewheel steering control unit (G94).
This procedure avoids using the resolver zero-setting test set TE3016.

2. Nosewheel Steering Control Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Shock Absorber Compression	1761/1
Lockwire, Dia 0.60 mm (0.024 in.) (Corrosion Resistant Steel)	
Rigging Pin - Nosewheel Steering Mechanism	D925197000
Wheel Chocks	
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	
Multimeter	
Graduated Quadrant - Nose Landing Gear	D924330000

DESCRIPTION	PART NO.
Graduated Quadrant Assy - Travel Range Measurement, LH Nosewheel Steering Control Handle	E920127000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Chock main gear wheels.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and Ref. 29-21-00, Servicing).

(5) Position jack 1761/1 under nose gear shock absorber jacking pad and jack up nose wheels clear of ground.

(6) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW "A" SYS SUP		G 295	M18
LH UC WEIGHT SW "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE UC W/SW "B" SUP		G 296	D 8
NOSE WHEEL STEERING CONT	15-215	G 91	D 8
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(7) Install tools D924330000 and E920127000.

(8) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Adjust

(1) In flight compartment, open access panels 212CS and 211DZ.

(2) Rig nosewheel steering control unit (G94) control mechanism cam using rigging pin D925197000.

(3) Turn the nose gear sliding tube so as to align the position mark on the wheel steering rotating tube and the reference mark on the nose gear leg.

(4) Remove cover from nosewheel monitoring unit (G95) resolver.

(5) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(6) Remove safety key C22646 from interphone box located on nose gear leg.

(7) On First Officer's instrument panel, on NOSE WHEEL steering test indicator (G190) press RESET pushbutton.

(a) NOSE WHEEL warning light and both STEERING warning lights go off.

(8) Make certain that the position mark on the wheel steering rotating tube and the reference mark on the nose gear leg are still aligned.

(9) If position mark on rotating tube and reference mark on nose gear leg are not aligned :

(a) Cut lockwire and loosen monitoring unit (G95) resolver attach screws.

(b) Slowly turn resolver body so as to align position mark on wheel steering rotating tube and reference mark on nose gear leg.

(c) Tighten resolver attach screws and wirelock.

(d) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(e) Remove rigging pin D925197000.

D. Test

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

MAKE CERTAIN THAT WHEEL AND RUDDER TRAVEL RANGES ARE CLEAR.

(1) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) Using steering control handle steer to left then right 60° as indicated on tool E920127000.

(a) Check on tool D924330000 that wheels turn 60° ± 1° 20' to left then right.

(3) Return control handle to 0° position.

(4) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(5) Install safety key C22646.

E. Close-Up

(1) De-energize the aircraft electrical network and disconnect the electrical ground power unit.

(2) Remove tools D924330000 and E920127000.

(3) Install monitoring unit (G95) cover.

(4) Remove jack 1761/1.

(5) Install access panels 211DZ and 212CS.

NOSEWHEEL STEERING ELECTRONIC UNIT - REMOVAL/INSTALLATION

WARNING: OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The electronic unit serves to provide electrically servo-controlled steering of nosewheels.

The nosewheel steering electronic unit is located in electronics rack, LH side (panel 10-215).

2. Nosewheel Steering Electronic Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	-

B. Prepare

(1) Make certain that the aircraft electrical network is de-energized.

(2) Trip, safety and tag the following circuit breakers:

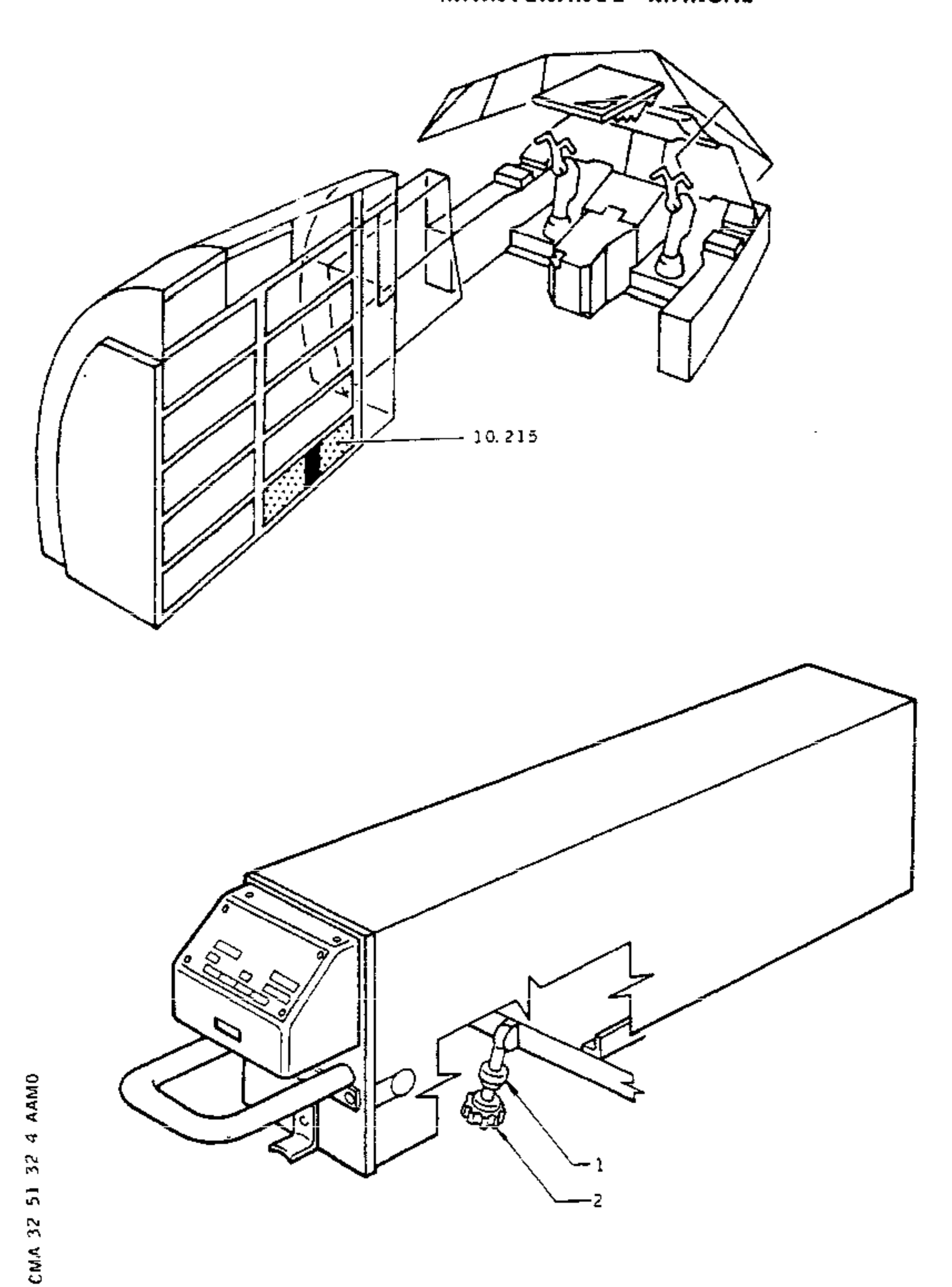
SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(3) In zone 215, remove rack panel 215AS.

C. Remove (Ref. Fig. 401)

(1) Loosen knurled nut (2) and disengage unit attach fitting (1).

(2) Slowly disengage unit from its support and remove.



Electronic Unit
Figure 401

RB (3) Examine rack and unit connectors for:

RB (a) Bent, damaged or corroded contact pins.

RB (b) Distorted, displaced or blackened socket
RB contacts.

RB (c) Pierced, or otherwise damaged dielectric.

RB (d) Connector body free from damaged polarising posts
RB and keyways.

RB NOTE: If connector is damaged refer to WDM 20-42-71.

R D. Install

RB (1) Examine unit connector for:

RB (a) Bent, damaged or corroded contact pins.

RB (b) Distorted, displaced or blackened socket
RB contacts.

RB (c) Pierced, or otherwise damaged dielectric.

RB (d) Connector body free from damaged polarising posts
RB and keyways.

RB NOTE: If connector is damaged refer to WDM 20-42-71.

(2) Position unit on support and slide fully home.

(3) Position attach fitting (1) and tighten knurled nut (2).

(4) Remove safety clips and tags and reset circuit breakers.

R E. Test

(1) Carry out a nosewheel steering functional test (Ref. 32-51-00, Adjustment/Test paragraph 5).

R F. Close-Up

(1) Make certain that working area is clean and clear of tools and micellaneous items of equipment.

(2) Install rack panel 215AS.

NOSE WHEEL MONITORING UNIT - REMOVAL/INSTALLATION

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

R MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON
R THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE
R ACTUAL POSITION OF THE LANDING GEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT NOSE WHEEL STEERING CONTROL UNIT SAFETY
R PIN IS INSERTED IN INTERPHONE BOX ON NOSE LANDING GEAR
LEG.

1. General

The nose wheel monitoring unit is located on the nose gear steering jack. It is an electrical component mechanically con-controlled by means of a gear installed on the steering jack.

2. Nose Wheel Monitoring Unit

A. Equipment and Materials

	DESCRIPTION	PART NO.
	Jack - Shock Absorber Compression	1761/1
	Wheel Chocks	
	Circuit Breaker Safety Clips	
R	Lockwire, Dia. 0.6 mm (0.024 in) Corrosion Resistant Steel	
	Special Products (Ref. 20-30-00, No.106)	
	Common Greases (Ref. 20-30-00, No.054)	
R	Cleaning Fluid (Ref. 20-30-00, No.469)	
R		

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(3) Immobilize main landing gear wheels by means of wheel chocks.

R (4) Position jack 1761/1 and jack up nose landing gear wheels clear of ground.

R R R (5) If necessary, turn shock absorber sliding tube so as to align position mark on steering bushing with reference mark on nose gear leg.

C. Remove
(Ref. Fig. 401)

(1) Disconnect electrical connectors from junction box (1)
R and hydraulic selector.

R (2) Remove nuts (10), (5), (12), retain washers (9), (4), (13) and remove bolts (8), (3), (14).

(a) Remove support (11) with its electrical cable assembly.

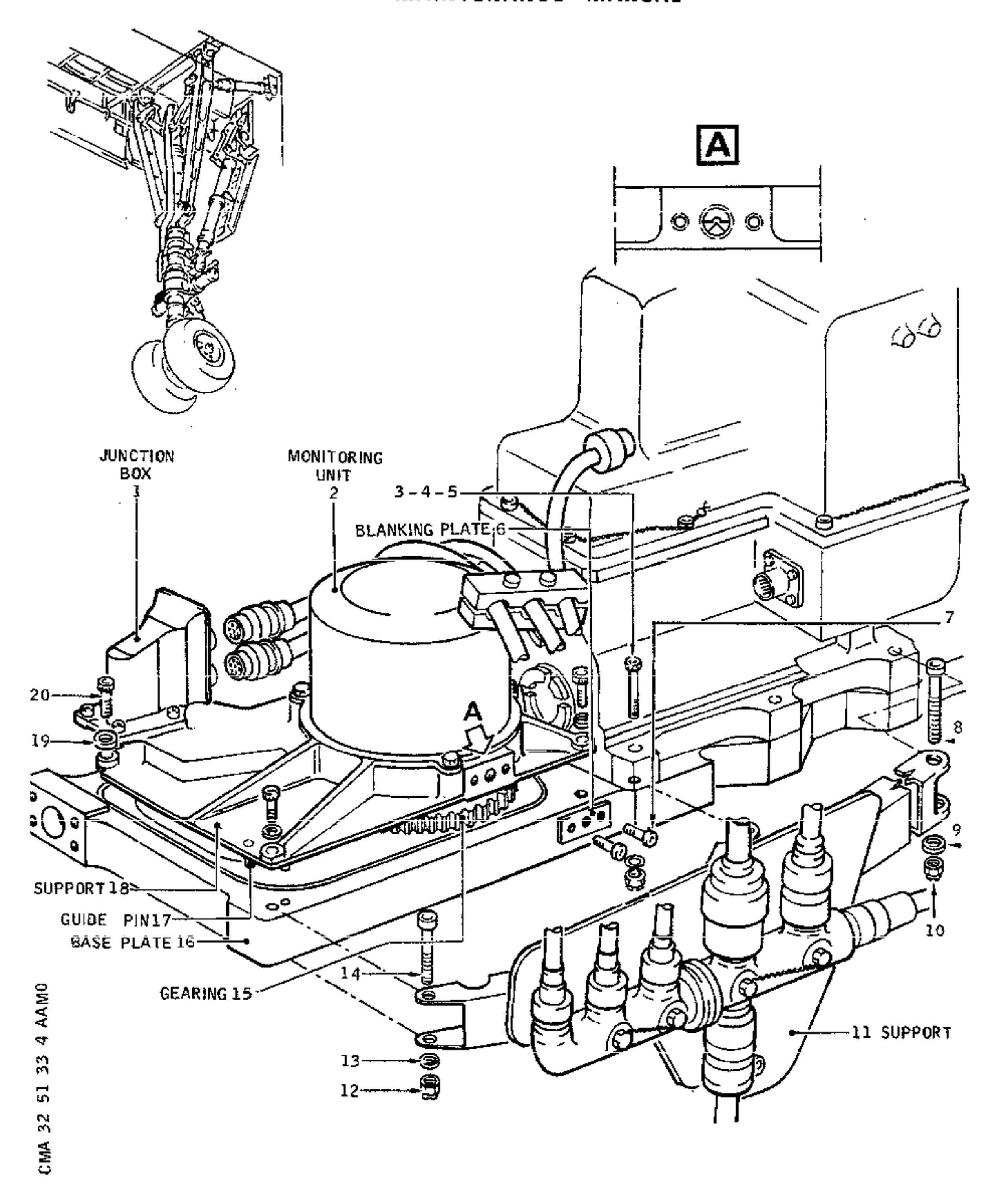
(3) Cut and remove lockwire and remove screws (20), retain washers (19).

(a) Remove support (18) and remove monitoring unit (2)

D. Preparation of Replacement Component

(1) On replacement monitoring unit.

(a) Cut and remove lockwire and remove screws (7).



R

Nose Wheel Monitoring Unit
Figure 401

(b) Remove blanking plate (6).

(c) With lint free cloth impregnated with Product No.469, clean support (18) mounting surface.

(d) Coat support (18) mounting surface with Product No.106.

(2) With lint free cloth impregnated with Product No.469, clean mounting surface of base plate (16).

(3) Coat gears with Product No.054.

E. Install

NOTE : Nose gear wheels are parallel to aircraft centerline and must be maintained in this position.

(1) Turn gearing (15) so that its pointer faces reference
R mark (Detail A).

(2) Position monitoring unit support (18) on base plate (16), then engage double gear in housing so as to locate guide pin (17).

(3) Check that gearing (15) pointer is facing reference
R mark (Detail A).

NOTE : Permissible tolerance : ± 1°

If engagement of gears causes a variation greater than
R ± 1°, check that alignment of position mark on
R steering rotating tube and reference mark on nose gear
leg has not been inadvertently changed.

R (4) Coat screws (20) with Product No.106, install washers (19) and install monitoring unit on base plate (16). Wirelock screws (20).

(5) Install blanking plate (6) on its support. Install screws (7), and wirelock.

(6) Position support (11) with its electrical cable assembly on base plate (16).

R (a) Coat screw (14) and (8) with Product No.106.

(b) Install bolts (8), (3) and (14). Fit washers (9), (4) and (13), install nuts (10), (5), (12).

R (c) Tighten nuts (10), (5), (12).

R (7) Connect electrical connectors to junction box (1) and to hydraulic selector.

(8) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

F. Adjustment/Test

R Carry out adjustment of resolvers using test set TE3016 (Ref. 32-51-00, Adjustment/Test) or carry out adjustment of resolvers without test set TE3016 (Ref. 32-51-33, Adjustment/Test).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

R (2) Remove jack 1761/1.

NOSEWHEEL MONITORING UNIT - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The procedure described in this topic is an alternative procedure for adjusting the steering system following replacement of nosewheel monitoring unit (G95).
This procedure avoids using the resolver zero-setting test set TE 3016.

2. Nosewheel Monitoring Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack-Shock Absorber Compression	1761/1
Lockwire. Dia 0.60mm (0.024in) (Corrosion Resistant Steel)	
Rigging Pin-Nosewheel Steering Mechanism	D925197000
Wheel Chocks	
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	
Multimeter	
Graduated Quadrant-Nose Landing gear	D924330000

DESCRIPTION	PART NO.
Graduated Quadrant Assy-Travel Range Measurement, LH Nosewheel Steering Control Handle	E920127000

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Chock main gear wheels.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and Ref. 29-21-00, Servicing)

(5) Position jack 1761/1 under nose gear shock absorber jacking pad and jack up nose wheels clear of ground.

(6) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW 'A' SYS SUP	1-213	G291	M16
LH UC WEIGHT SW 'A' SYS SUP	1-213	G292	M17
RH UC WEIGHT SW 'A' SYS SUP	1-213	G295	M18
LH UC WEIGHT SW 'B' SYS SUP	3-213	G293	B 8
RH UC WEIGHT SW 'B' SYS SUP	3-213	G294	B 9
NOSE UC W/SW 'B' SUP	3-213	G296	D 8
NOSE WHEEL STEERING CONT	15-215	G 92	B 6

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(7) Install tools D924330000 and E920127000.

(8) Connect the electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Adjust

(1) In flight compartment open access panels 212CS and 211DZ.

(2) Rig nosewheel steering control unit (G94) control mechanism cam using rigging pin D925197000.

(3) Turn the nose gear sliding tube so as to align the position mark on the wheel steering rotating tube and the reference mark on the nose gear leg.

(4) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING CONT	13-215	G 91	D 8

(5) Disconnect nosewheel monitoring unit (G95) plugs (G95A) and (G95B).

(6) Connect flying lead between noswheel monitoring unit (G95) socket (A) terminal F and plug (G95A) terminal F

(7) Connect flying lead between noswheel monitoring unit (G95) socket (A) terminal D and plug (G95A) terminal D

(8) Connect voltmeter between noswheel monitoring unit (G95) socket (A) terminals C and B.

(9) Remove safety clip and tag and reset circuit breaker G91.

(10) Remove nosewheel monitoring unit (G95) resolver cover.

(11) Cut lockwire and loosen resolver attach screws.

(12) Slowly turn nosewheel monitoring unit (G95) resolver body to achieve minimum reading on voltmeter (100 mV approx.).

(13) Tighten resolver attach screws and wirelock. Make certain that reading on voltmeter is unchanged.

(14) Trip, safety and tag circuit breaker G91.

(15) Disconnect voltmeter.

(16) Remove flying leads and connect plugs (G95A) and (G95B)

(17) Remove safety clip and tag and reset circuit breaker G91.

(18) Make certain that the position mark on the wheel steering rotating tube and the reference mark on the nose gear leg are aligned.

(19) Pressurize yellow hydraulic system (Ref. 29-21-00, Servicing).

(20) Remove safety key C22646 from interphone box located on nose gear leg.

(21) On First Officer's instrument panel, on NOSE WHEEL steering test indicator (G190) press RESET pushbutton.

(a) NOSE WHEEL warning light and both STEERING warning lights go off.

(22) Make certain that position mark on wheel steering rotating tube and the reference mark on the nose gear leg are still aligned.

(23) If position mark on rotating tube and reference mark on nose gear leg are not aligned.

(a) Cut lockwire and loosen monitoring unit (G95) resolver attach screws.

(b) Slowly turn resolver body so as to align position mark on wheel steering rotating tube and reference mark on nose gear leg.

(c) Tighten resolver attach screws and wirelock.

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(d) Shut down and depressurize yellow hydraulic system (Ref. 29-21-00, Servicing).

(e) Remove rigging pin D925197000.

D. Test

WARNING : MAKE CERTAIN THAT THE RUDDER PEDALS, THE CONTROL HANDLES AND THE WHEELS ARE IN ZERO POSITION.

MAKE CERTAIN THAT WHEEL AND RUDDER TRAVEL RANGES ARE CLEAR.

(1) Pressurize yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) Using steering control handle steer to left then right 60° as indicated on tool E920127000.

(a) Check on tool D924330000 that wheels turn 60° ± 1° 20' to left then right.

(3) Return control handle to 0° position.

(4) Depressurize yellow hydraulic system (Ref. 29-21-00, Servicing).

(5) Install safety key C22646.

E. Close-Up

(1) De-energize the aircraft electrical network and disconnect the electrical ground power unit.

(2) Remove tools D924330000 and E920127000.

(3) Install monitoring unit (G95) cover.

(4) Remove jack 1761/1.

(5) Install access panels 211 DZ and 212 CS.

MICROSWITCH ON INTERPHONE BOX - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

R The microswitch serves to disconnect the nosewheel steering before towing the aircraft. The microswitch is installed on the interphone box located on the nose landing gear leg.

2. Microswitch on Interphone Box

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire, Dia. 0.6 mm (0.024 in.) (Corrosion Resistant Steel)	
Special Materials (Ref. 20-30-00, No.106)	
R Special Materials (Ref. 20-30-00, R No.119)	

B. Prepare

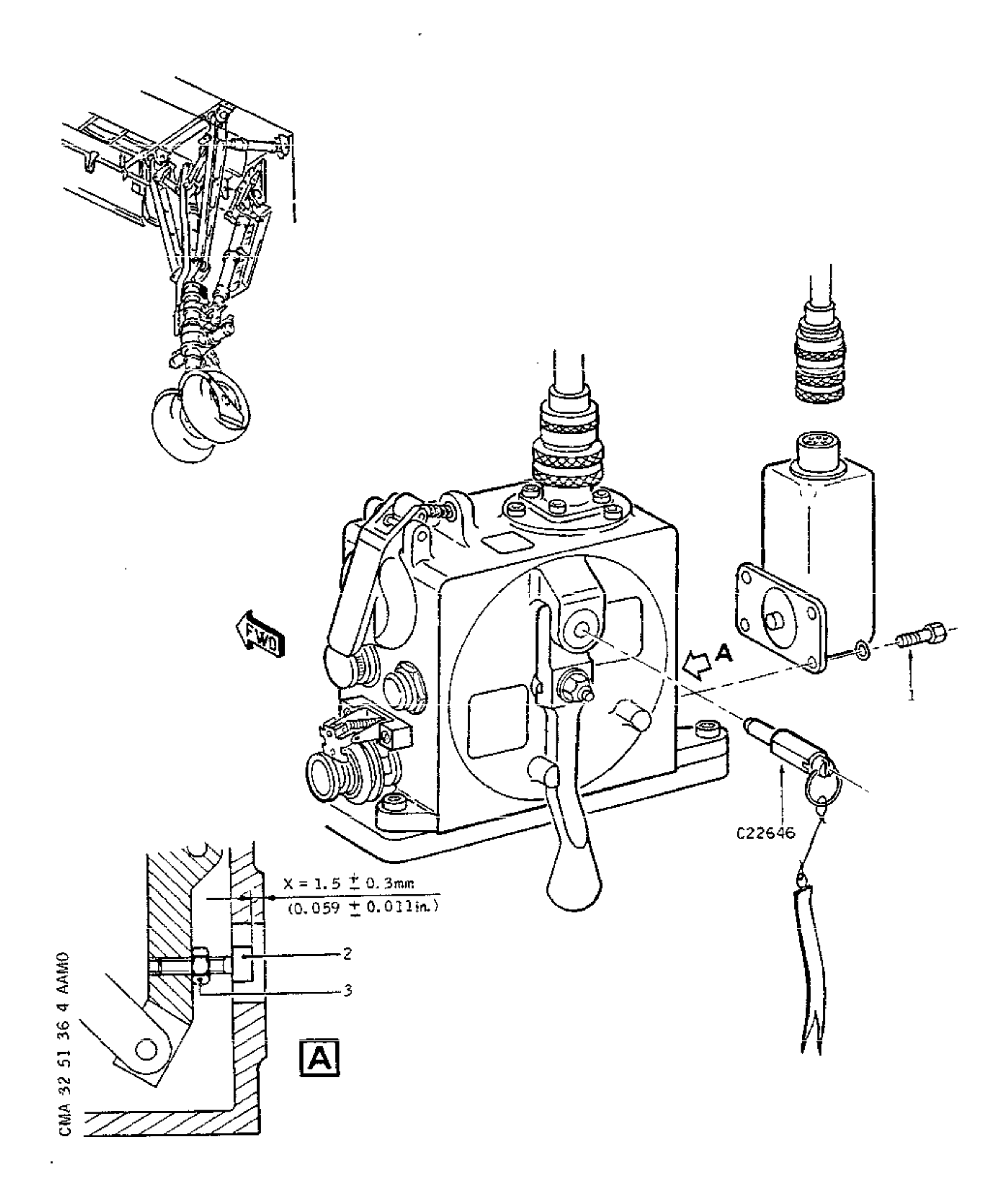
(1) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING SUP	15-216	G 93	A18

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

(2) Cut and remove lockwire, remove screws (1) and remove microswitch.



Microswitch
Figure 401

D. Preparation of Replacement Component

(1) Check that microswitch actuator on interphone box is correctly adjusted.

(a) Remove safety key C22646 from interphone box. Check actuator (2) travel dimension X. Dimension X should be : 1.5 ± 0.3 mm (0.059 ± 0.011 in.). If necessary adjust actuator (2) as follows :
- loosen nut (3)
- turn actuator (2) as required to achieve correct dimension
- tighten nut (3)

(b) Place lever on interphone box in vertical position and install safety key C22646.

R (2) Before installing microswitch prepare as follows :

R - Apply product No. 119 to the annular volume around
R plunger

R - Install grease retaining membrane.

E. Install

(1) Coat screws (1) with product No.106.

(2) Position microswitch and secure with screws (1). Safety screws (1) with lockwire (Ref. 20-21-13).

(3) Remove protective cap and connect microswitch electrical connector.

(4) Remove safety clip and tag and reset circuit breaker.

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Make certain that nose wheels are aligned and steering control handles in 0 position.

(3) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(4) NOSE WHEEL and STEERING warning lights are on.

(5) Remove safety key C22646 from interphone box.

(6) NOSE WHEEL and STEERING warning lights go off.

(7) Place lever on interphone box in vertical position and install safety key C22646.

(8) NOSE WHEEL and STEERING warning lights come on.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

NOSE WHEEL STEERING SUPPLY VALVE BLOCK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The supply valve block located forward of gear hinge in nose gear bay LH side, supplies nose wheel steering system with Green or Yellow pressure.

2. Supply Valve Block

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform - 3.22 m (10 ft.7 in.)	
Circuit Breaker Safety Clips	
Lockwire - Dia. 0.8 mm (0.032 in.) Corrosion Resistant Steel	
Container	
Blanking Plugs/Caps	

DESCRIPTION	PART NO.
Safety Sleeve - Nose Landing Gear Doors	E925002000

B. Prepare

(1) Take the precautions described in previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by means of operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(11) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(12) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(13) Install safety sleeves on gear door actuating jacks.

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical plug.

(2) Mark, disconnect and cap hydraulic lines.

(3) Cut and remove lockwire, remove screws (2), retain washers (1) for re-installation. Remove supply valve block.

D. Preparation of Replacement Component

NOTE : Supply valve block is filled with hydraulic fluid No.011 (Ref. 20-30-00).

On removed valve block, remove unions and install on replacement valve block with new seals.

E. Install

(1) Install supply valve block with screws (2) and washers (1). Wirelock screws.

(2) Connect hydraulic lines in accordance with marking made during removal.

(3) Connect electrical plug.

F. Test

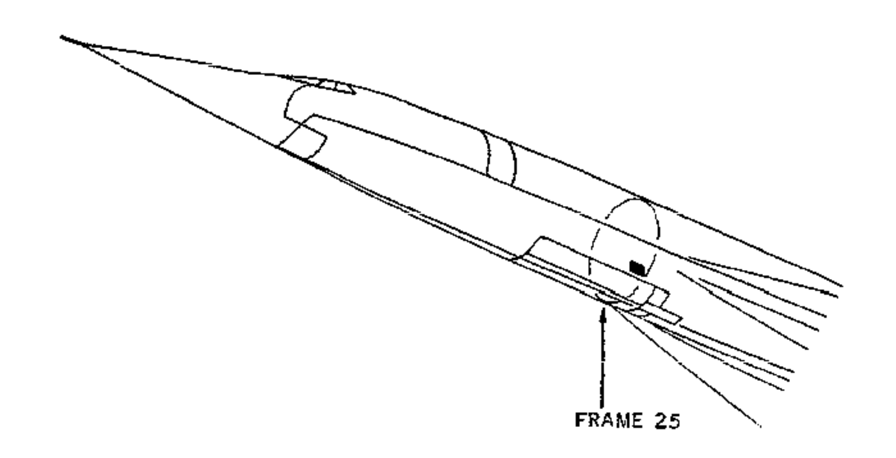
WARNING : MAKE CERTAIN THAT NOSEWHEELS ARE CENTRED.

(1) Remove key C22646 from interphone box located on nose gear.

(2) Remove safety clips and tags and reset circuit breakers

(3) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(4) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).



2

1

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Supply Valve Block
Figure 401

R

(5) On First Officer's instrument panel and on panels 3-211, 3-212, make certain that NOSE WHEEL and STEERING warning lights are off. If they are on, press RESET pushbutton to extinguish them.

(6) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(8) On First Officer's instrument panel and on panels 3-211, 3-212, make certain that NOSE WHEEL and STEERING warning lights are off.

(9) During these steps, check valve block for evidence of external leakage.

(10) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(11) Remove safety sleeves from gear door actuating cylinders.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(12) On First Officer's instrument panel, place landing gear NORMAL control lever in DOWN position.

(13) Close gear doors by means of operating handle located on nose gear leg. Install locking cap.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Install key C22646 on interphone box.

(3) Close access doors.

HP FILTER - SERVICING

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The HP filter is installed in the nose gear bay downstream of the steering unit supply manifold. Removal of filter bowl and cartridge element causes the diaphragm and valve to close. Hydraulic fluid is thus prevented from escaping from the system.

2. Removal of Filter Element

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 4.24 in. (13 ft.11in.)	
Container	
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.
Lockwire - Dia. 0.028 in. (0.70 mm) Corrosion Resistant Steel	
Hydraulic Fluid (Ref. 20-30-00, No. 011)	
Cleaning Product (Ref. 20-30-00, No.468)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, check that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit, and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open doors by operating handle located on nose gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTION RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(11) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(12) Depressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(13) Install safety collars on door actuating jacks.

C. Remove
(Ref. Fig.301 and 302)

(1) Cut and remove lockwire.

(2) Unscrew and remove bowl (6) with filter element (5).

(3) Remove and discard filter element (5).

D. Preparation of Replacement Component

(1) Clean bowl (6) and dry with filtered compressed air.

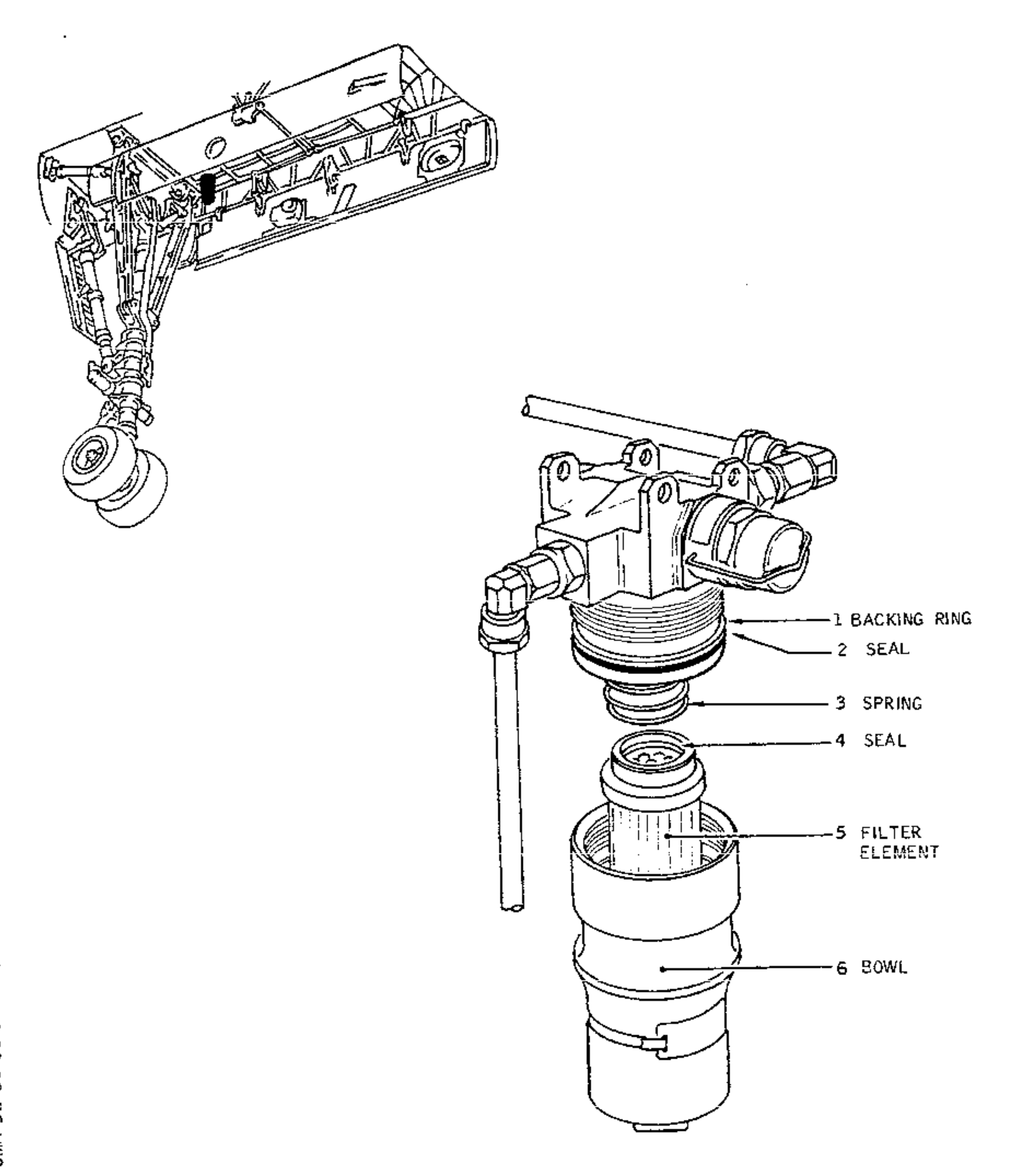
Make certain that head-to-bowl seal (2), backing ring (1) and filter element seal (4) are undamaged free from foreign matter and correctly installed. Make certain that element removal spring (3) is correctly located in the base of diaphragm.

NOTE 1 : If backing ring (1) is replaced proceed as indicated on figure below.
(Ref. Fig. 302)

NOTE 2 : During assembly the seals must only be lubricated with product No.011.

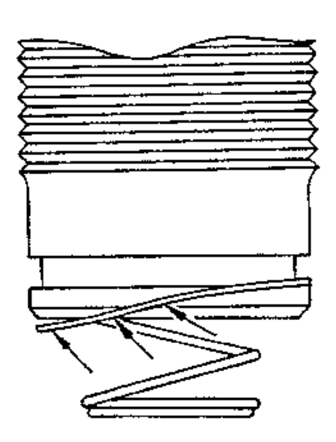
(2) Install filter element (5) in bowl (6).

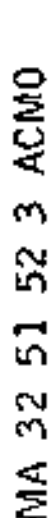
(3) Fill bowl (6) with Product No.011.



HP Filter
Figure 301

R





Backing Ring
Figure 302

CAUTION : DO NOT FILL THROUGH OPEN END OF FILTER ELEMENT.

E. Install

(1) Install bowl (6) and filter element (5) on filter body.

(2) Tighten bowl and torque to 40 lbf. in. (0.460 m.daN).

(3) Safety bowl with lockwire (Ref. 20-21-13).

(4) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make certain that no trace of hydraulic fluid remains.

(5) Remove safety collars.

(6) Remove access platform.

(7) Remove safety clips and tags and reset circuit breakers.

(8) Pressurize Green and Yellow hydraulic tanks (Ref. 29-13-00, Servicing).

(9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) Close doors by operating handle located on nose gear leg. Install locking cap.

(12) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(13) Shut down, and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

F. Test

Filter assembly shall be carefully checked for external leakage during initial pressurization of wheel steering system (Ref. 32-51-00, Adjustment/Test).

G. Close-Up

(1) Replenish Green and Yellow hydraulic tanks, as required (Ref. 12-12-29).

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Close access doors.

HP FILTER - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Check nosewheel steering HP filter for clogging by means of the clogging indicator.
The indicator is located on the nosewheel steering HP filter (3559) in the nose gear bay.

2. Clogging Indicator

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
**ON A/C ALL	
Circuit Breaker Safety Clips	
Access Platform 4.24 m (13ft. 11 in.)	

Printed in England

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL poaition.

(3) Make certain that the visor is not uplocked.

(4) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on nose landing gear leg.

(8) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

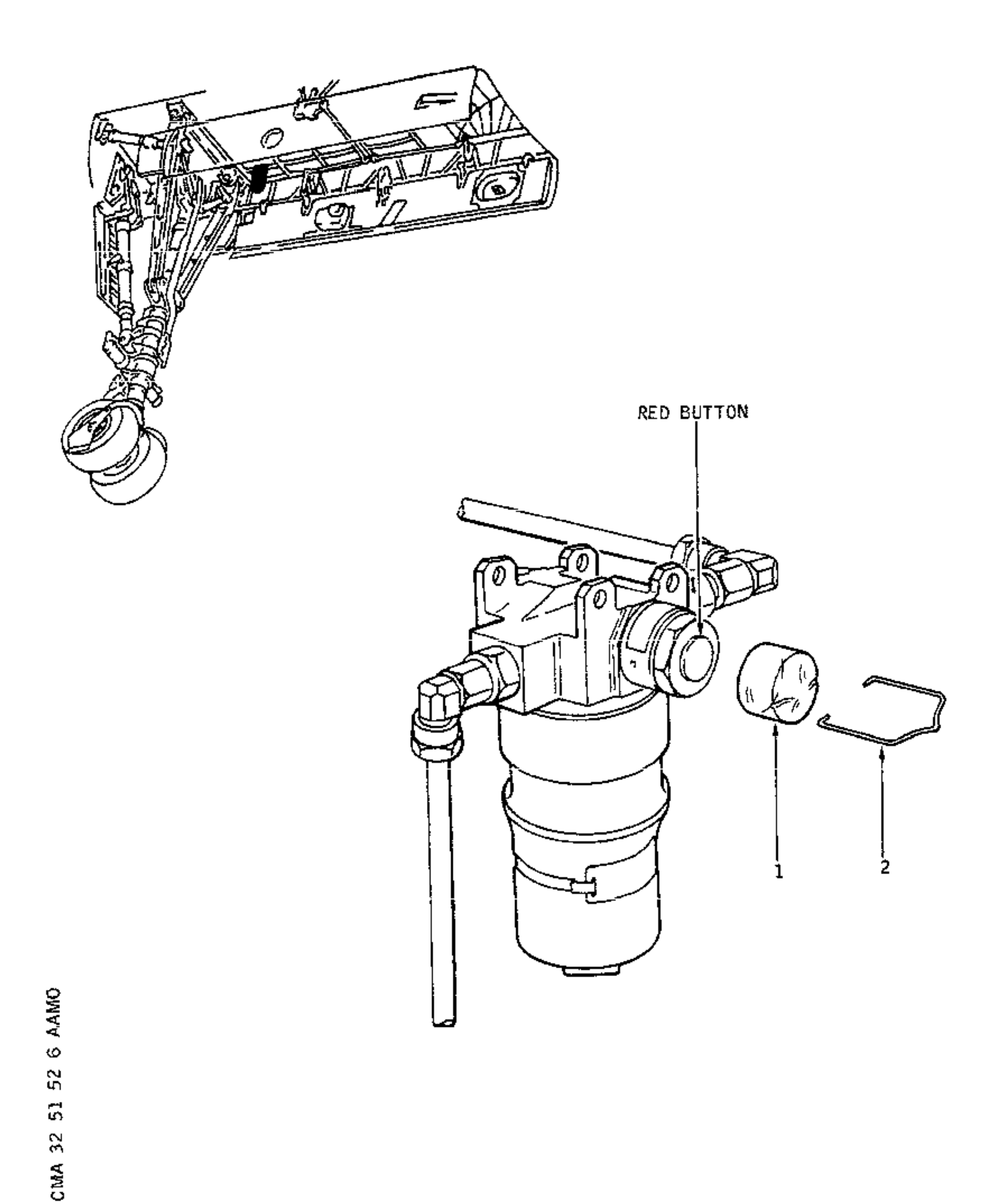
(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing)

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A6
UC SELECTOR RAISE CONT		G 2	A7
UC LOWER DOORS OPEN SUP		G 3	A8
UC SELECTOR LOWER CONT		G 4	A9

(11) Install safety sleeves on door actuating jacks.

C. Procedure (Ref. Fig. 601)



Clogging Indicator
Figure 601

(1) Make certain that clogging indicator red button is not in released position.

If clogging indicator red button is in released position, replace filter element (Ref. 32-51-52, Servicing).

D. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2) Remove safety sleeves from door actuating jacks.

(3) Remove safety clips and tags and reset circuit breakers.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) Close gear doors by operating handle located on nose landing gear leg. Install locking cap.

(7) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(8) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(9) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(10) Close access doors and remove access platform.

SAFETY ELECTRO-VALVE - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The safety electro-valve shuts off the Yellow hydraulic system supply to the nosewheel steering supply valve block G98 when there is a drop in fluid level in the Yellow hydraulic tank.
The safety electrovalve is located in the nose gear bay, LH side.

2. Safety Electro-Valve

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Safety Sleeve - Nose Landing Gear Doors	E925002000
Access Platform 3.97 m (13 ft.)	
Circuit Breaker Safety Clips	

DESCRIPTION	PART NO.

**ON A/C ALL

Lockwire Dia. 0.80 mm (0.032 in.)
Corrosion Resistant Steel

Container

B. Prepare

(1) Take the precautions described in the previous WARNING paragraphs.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Make certain that visor is not uplocked.

(4) Connect electrical ground power unit, and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(5) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(6) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(7) Remove locking cap and open gear doors by operating handle located on nose gear leg.

(8) On First Officer instrument panel, place landing gear Normal control lever in NEUTRAL position.

(9) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
PFC & RELAY JACK "B" SYS CONT YELL L/LEVEL	1-213	C 288	P18
PFC & RELAY JACK "A" SYS CONT YELL L/L	3-213	C 282	A 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR OPEN CONT		G 4	A 9

(11) Depressurize the Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(12) Depressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(13) Install safety sleeves on door actuating jacks.

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connector.

(2) Cut and remove lockwire, remove screws (1) and washers (2).

(3) Remove safety electro-valve and discard spools (3).

(4) Blank off ports in base plate.

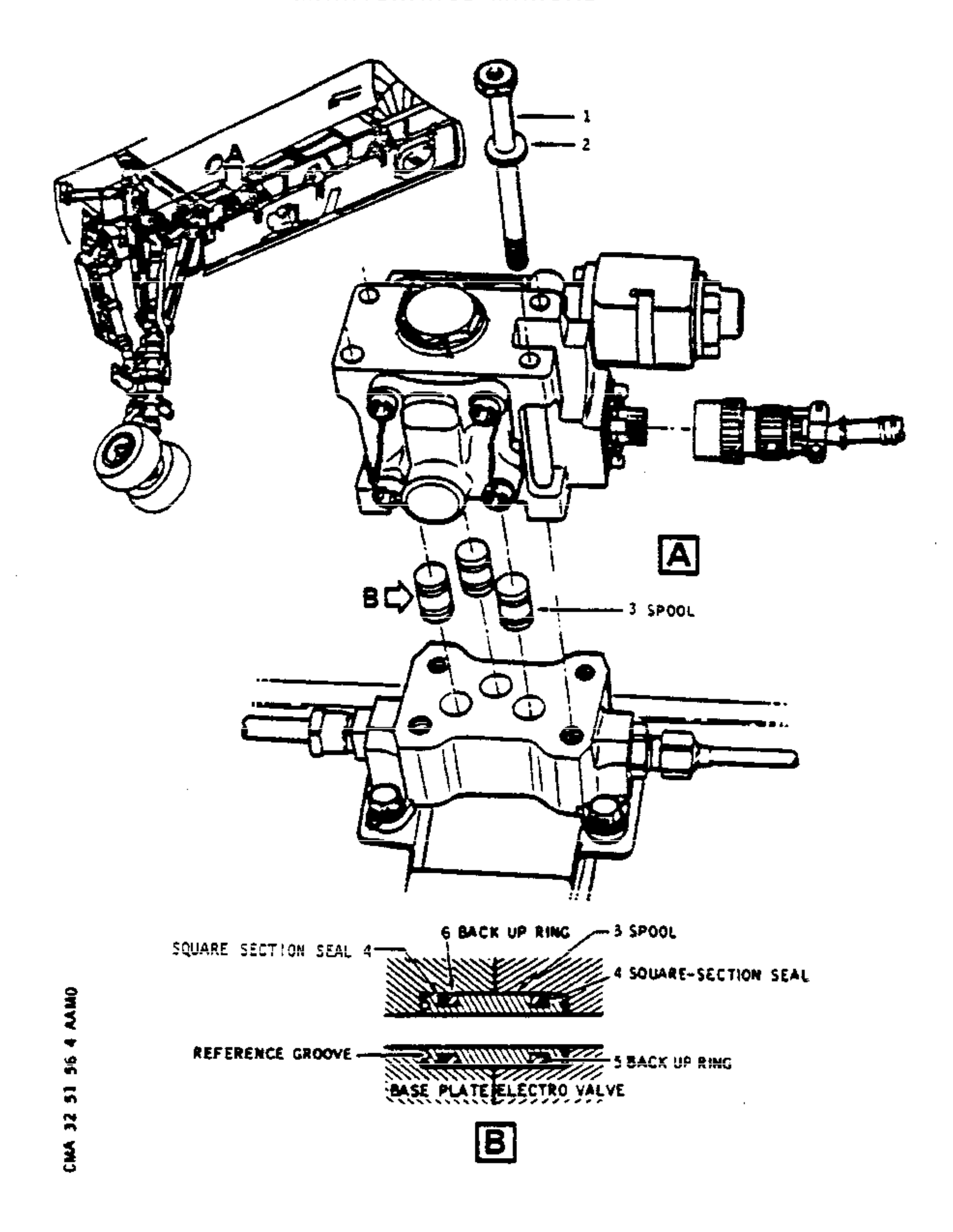
D. Preparation of Replacement Component

NOTE: The replacement electro-valve is filled with Product No.011 (Ref. 20-30-00).

Make certain that replacement spools are fitted correctly
R with back-up rings (5) (6), and square section seals (4).
R
R

E. Install

(1) Remove blanking plugs from base plate.



Safety Electro-Valve
Figure 401

R

(2) Install spools (3) fitted with seals.

NOTE : The end of the spool bearing the marking must be installed facing the base plate.

(3) Install electro-valve and attach it by means of screws (1) and washers (2).
Safety screws (1) in pairs, using lockwire.

(4) Connect electrical connector.

(5) Remove safety clips and tags and reset circuit breakers.

F. Tests

(1) Remove safety key C22646 from interphone box located on nose gear leg.

(2) Pressurize Yellow hydraulic tank (Ref. 29-13-00, Servicing).

(3) Pressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

NOTE : Make certain that the Green hydraulic system is not pressurized.

(4) Check electro-valve for evidence of external leakage.

(5) On SERVO CONTROLS overhead panel press YELLOW LEVEL TEST push-button.

(6) On First Officer's instrument panel, NOSE WHEEL indicator light and STEERING indicator lights on panels 3-211 and 3-212 illuminate.
Release YELLOW LEVEL TEST push-button.

G. Close-Up

(1) Shut down and depressurize Yellow hydraulic system (Ref. 29-21-00, Servicing).

(2) Install safety key C22646 in interphone box.

(3) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(4) Remove safety sleeves from nose gear door actuating jack.

(5) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(6) Pressurize the Green hydraulic system (Ref. 29-11-00, Servicing).

(7) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) Close doors by operating handle located on nose gear leg.
Install locking cap.

(9) On First Officer's instrument panel, place the landing gear Normal control lever in NEUTRAL position.

(10) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(11) Disconnect electrical ground power unit and de-energize the aircraft electrical network.

(12) Replenish hydraulic tanks as required (Ref. 12-12-29)

(13) Close access doors.

NOSEWHEEL STEERING HYDRAULIC SELECTOR - REMOVAL/INSTALLATION

R WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON
R THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE
R ACTUAL POSITION OF THE LANDING GEAR.

R BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT NOSE WHEEL STEERING SAFETY KEY IS INSERTED IN INTERPHONE BOX LOCATED ON NOSE GEAR LEG.

1. General

The nosewheel steering hydraulic selector is mounted on a base plate above the steering jack. The selector is an electro-hydraulic component which serves to control the rate of steering jack piston displacement, in response to the electrically transmitted control signals from the flight compartment.

R 2. Nosewheel Steering Hydraulic Selector

A. Equipment and Materials

DESCRIPTION	PART NO.
Container	
Electrical Ground Power Unit	
Lockwire, 0.6 mm (0.024 in.) (Corrosion Resistant Steel)	
R Jack - Shock Absorber Compression	1761/1
Circuit Breaker Safety Clips	
R Wheel Chocks	
Special Products (Ref. 20-30-000, No. 106)	

DESCRIPTION	PART NO.
Cleaning Fluid (Ref. 20-30-00, No. 469)	

R

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Depressurize Green and Yellow hydraulic tanks (Ref.
R 29-13-00, Servicing).

(3) Depressurize Green and Yellow hydraulic systems (Ref.
R 29-11-00, Servicing and 29-21-00, Servicing).

(4) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND	15-215	G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

R (5) On pressure supply unit, cut and remove lockwire and
R remove charging valve cover.

R (6) Unscrew charging valve and release nitrogen pressure.

(7) Position container.

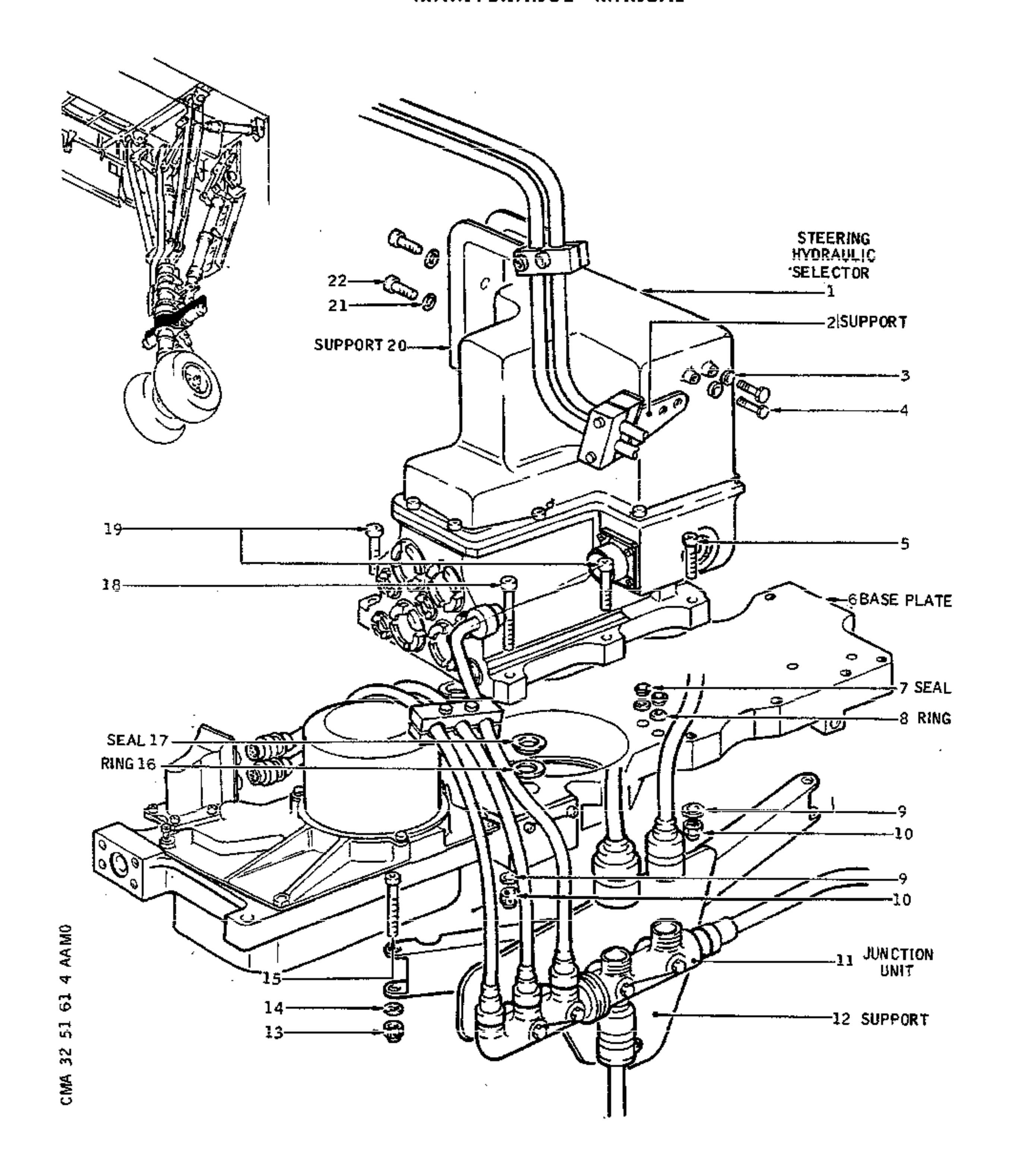
R WARNING : PROTECT TYRES AND BRAKES AGAINST CONTAMINA-
R TION WITH HYDRAULIC FLUID.

(8) Depressurize steering unit by slowly unscrewing seal plug under pressure supply unit.

(9) Tighten and wirelock seal plug.

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical connectors.



R

Nosewheel Steering Hydraulic Selector
Figure 401

(2) On steering hydraulic selector cut and remove lockwire, remove nuts (4) and (22), retain washers (3) and (21).

(3) Remove supports (2) and (20) with their wiring.

(4) Remove nuts (10) and (13), retain washers (9) and (14).

(5) Cut and remove lockwire and remove screws (5), (15), (18) and (19).

(6) Remove junction unit (11) with support (12).

(7) Remove steering hydraulic selector (1).

D. Preparation of Replacement Component

NOTE : Replacement steering unit is filled with product No. 011.

(1) Discard seals (7) and (17) and rings (8) and (16).

(2) Using lint-free cloth impregnated with product No.469, clean surfaces of steering hydraulic selector (1) and base plate (6) before bringing into contact.

(3) Coat surface of steering hydraulic selector with product No.106 before bringing into contact with base plate.

WARNING : DO NOT COAT BORE ADJACENT AREAS. SEALS AND RINGS MUST NOT BE IN CONTACT WITH PRODUCT No.106.

(4) Fit replacement steering hydraulic selector with new seals and rings.

(a) Place rings (8) on seals (7) and rings (16) on seals (17).

(b) Install seals and rings in corresponding bores on steering hydraulic selector.

CAUTION : RINGS MUST BE ON BASE PLATE SIDE.

E. Install

(1) Install equipped steering hydraulic selector (1) on base plate (6).

(2) Install equipped support (12).

R (3) Coat screw (5), (15), (18) and (19) with product No.106

(4) Install and tighten screws (18) and (19).

(5) Install screws (5) and (15) with washers (9)(14) and nuts (10)(13) and tighten assembly.

(6) Wirelock screws (5)(15)(18)(19).

(7) Install support (20) on steering hydraulic selector and secure by means of screws (22) and washers (21).

(8) Install support (2) on steering unit and secure by means of screws (4) and washers (3).

(9) Wirelock screws (4) and (22).

(10) Connect electrical connectors on steering hydraulic
R selector (1) junction unit (11), and monitoring unit.

(11) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Check particularly that no trace of hydraulic fluid remains.

R (12) Charge pressure supply unit (Ref. 32-51-62, Servicing).

(13) Pressurize Green and Yellow hydraulic tanks (Ref.
R 29-13-00, Servicing).

(14) Replenish Green and Yellow hydraulic tanks as required (Ref. 12-12-29).

(15) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

F. Tests

R (1) Chock main gear wheels.

R (2) Using jack 1761/1, lift nose gear wheels clear of
R ground.

R (3) Make certain that nosewheels are centred.

R (2) Remove safety key C22626 from interphone box (R75).

R (5) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00,
R Servicing).

(6) Pressurize Green hydraulic system (Ref. 29-11-00,

R Servicing).

R (7) Make certain that NOSE WHEEL and STEERING warning
R lights are off. If necessary press RESET pushbutton.

R (8) Using steering control handle, steer 60° to left then
R to right (mechanical stop).

R (9) Make certain that nosewheels move in conformity with
R order given. Then return steering control handle to
R 0° position.

R (10) During these operations check component for leakage.

R (11) Shut down and depressurize Green hydraulic system
R (Ref. 29-11-00, Servicing).

R (12) Lower the aircraft onto its wheels.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

R (2) Install safety key C22646 in interphone box (R75).

(3) Close access doors.

Printed in England

PRESSURE SUPPLY UNIT - SERVICING

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Charging of pressure supply unit after replacement or check.

2. Charging of Pressure Supply Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Air/Hydraulic Tool Kit	
Nitrogen Source Capable of Providing at least 435 psi (30 bars)	
Lockwire 0.6 mm (0.024 in.) (Corrosion Resistant Steel)	

R

B. Prepare

R (1) Take the precautions described in the previous WARNING paragraph.

(2) Depressurize Green and Yellow hydraulic tanks
R (Ref. 29-13-00, Servicing).

(3) Depressurize Green and Yellow hydraulic systems (Ref.
R 29-11-00, Servicing and 29-21-00, Servicing).

(4) Release internal pressure from the pressure supply unit by slowly unscrewing seal plug (6) located under the base plate.

(5) Tighten seal plug (6) and safety with lockwire.

C. Charging (Ref. Fig. 301)

(1) Assemble charging system using components from the air/ hydraulic tool kit.

NOTE : The part numbers of charging system components correspond with those mentioned in the air/hydraulic tool kit.

(2) Cut and remove lockwire, then remove charging valve protective cover (3).

(3) Remove charging valve cap (4).

(4) Connect charging system to charging valve (5).

(5) Place control valve (12) in following configuration :

Valves (a) and (b) closed,
Bleed connector cap removed.

R (6) Adjust nitrogen source pressure to 15 bars (217.56 psi) and open valve of pressure source to supply charging system.

(7) Unscrew charging valve control nut by one and a half turns.

R WARNING : HOLD VALVE BODY WITH WRENCH WHILE ROTATING
R VALVE CONTROL NUT.

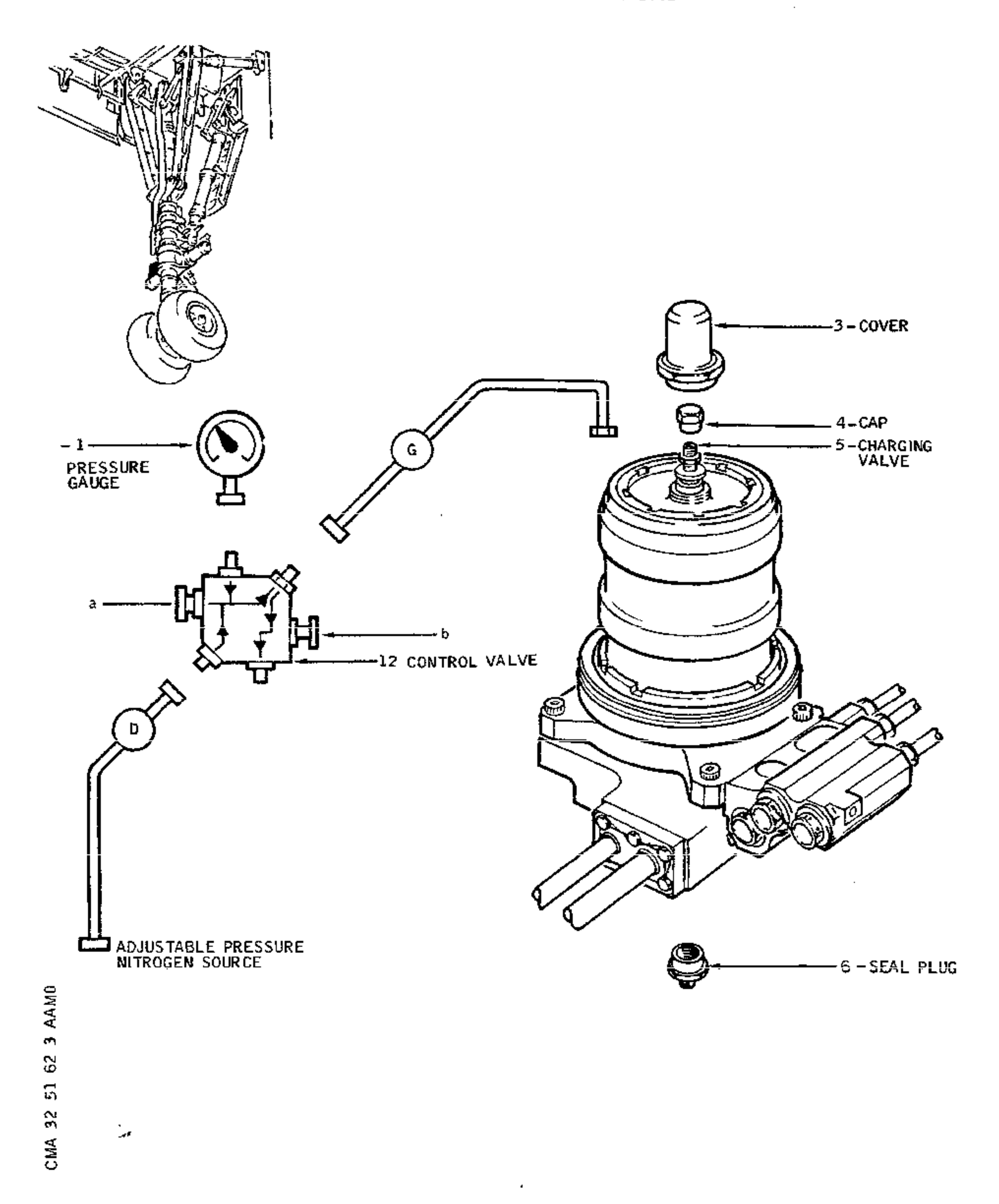
(8) Slowly open valve (a) of control valve and monitor pressure build-up on pressure gauge : wait one or two minutes until pressure stabilizes.

(9) If pressure in the pressure supply unit is too low build up pressure to required level using nitrogen source.

(10) If pressure in the pressure supply unit is too high close valve (a) and slowly open valve (b) until required pressure is obtained.

(11) Tighten charging valve control nut.
R Torque nut to between 0.5 and 0.8 m.daN (44 and 70
R lbf.in.).

(12) Close nitrogen source valve and open valve (b) of valve (12) so as to release pressure from the charging system.



Charging of Pressure Supply Unit
Figure 301

(13) Disconnect the charging system and tighten valve cap (4).

(14) Install protective cover (3), fully tighten and safety with lockwire.

D. Close-Up

(1) Pressurize Green and Yellow hydraulic tanks
R (Ref. 29-13-00, Servicing).

(2) Close access doors.

PRESSURE SUPPLY UNIT - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

R MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED
R ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH
R THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

MAKE CERTAIN THAT NOSE GEAR WHEEL STEERING SAFETY KEY IS INSERTED IN INTERPHONE BOX LOCATED ON NOSE GEAR LEG.

1. General

The pressure supply unit is installed on a base plate above the steering jack.
R It maintains a constant pressure of 30 bars (435 psi) within the steering system internal hydraulics during anti-shimming operation.

2. Pressure Supply Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Blanking Plugs/Caps	
Electrical Ground Power Unit	
Hydraulic Fluid Container	
Lockwire 0.8 mm (0.032 in.) (Corrosion Resistant Steel)	

DESCRIPTION	PART NO.
Lockwire 0.6 mm (0.024 in.) (Corrosion Resistant Steel)	
Circuit Breaker Safety Clips	
Special Products (Ref. 20-30-00, No.106)	
Cleaning (Ref. 20-30-00, No.469)	

R B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Depressurize Green and Yellow hydraulic tanks (Ref.
R 29-13-00, Servicing).

(3) Depressurize Green and Yellow hydraulic systems (Ref.
R 29-11-00, Servicing and 29-21-00, Servicing).

(4) Trip safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR LOWER CONT		G 4	A 9
NOSE WHEEL STEERING IND		G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(5) Cut and remove lockwire, remove cover (1) from pressure supply unit charging valve (2).

(6) Unscrew charging valve and relieve nitrogen pressure.

(7) Position hydraulic fluid container.

R WARNING : PROTECT TYRES AND BRAKES AGAINST CONTAMINA-
R TION WITH HYDRAULIC FLUID.

(8) Unscrew slowly seal plug (8) located under base plate
R (9) in order to release internal pressure.

(9) Tighten and wirelock seal plug.

C. Remove

(1) Disconnect electrical plug from the nose gear door
R ground opening control unit microswitch.

(2) Cut and remove lockwire, and disconnect hydraulic lines (5).

(3) Cut lockwire on screws (4) and (16).

(4) Remove nuts (12). Retain washers (13) for reinstallation.

(5) Loosen and remove screws (4).

R (6) Remove screws (16). Remove control unit support plate (15) and retain washers (14) for reinstallation.

(7) Remove pressure supply unit (3).

(8) Cap open line ends.

D. Preparation of Replacement Component

NOTE : The pressure supply unit is filled with Product No. 011.

(1) On removed pressure supply unit.

(a) Remove adapters (6) and discard seals (7).

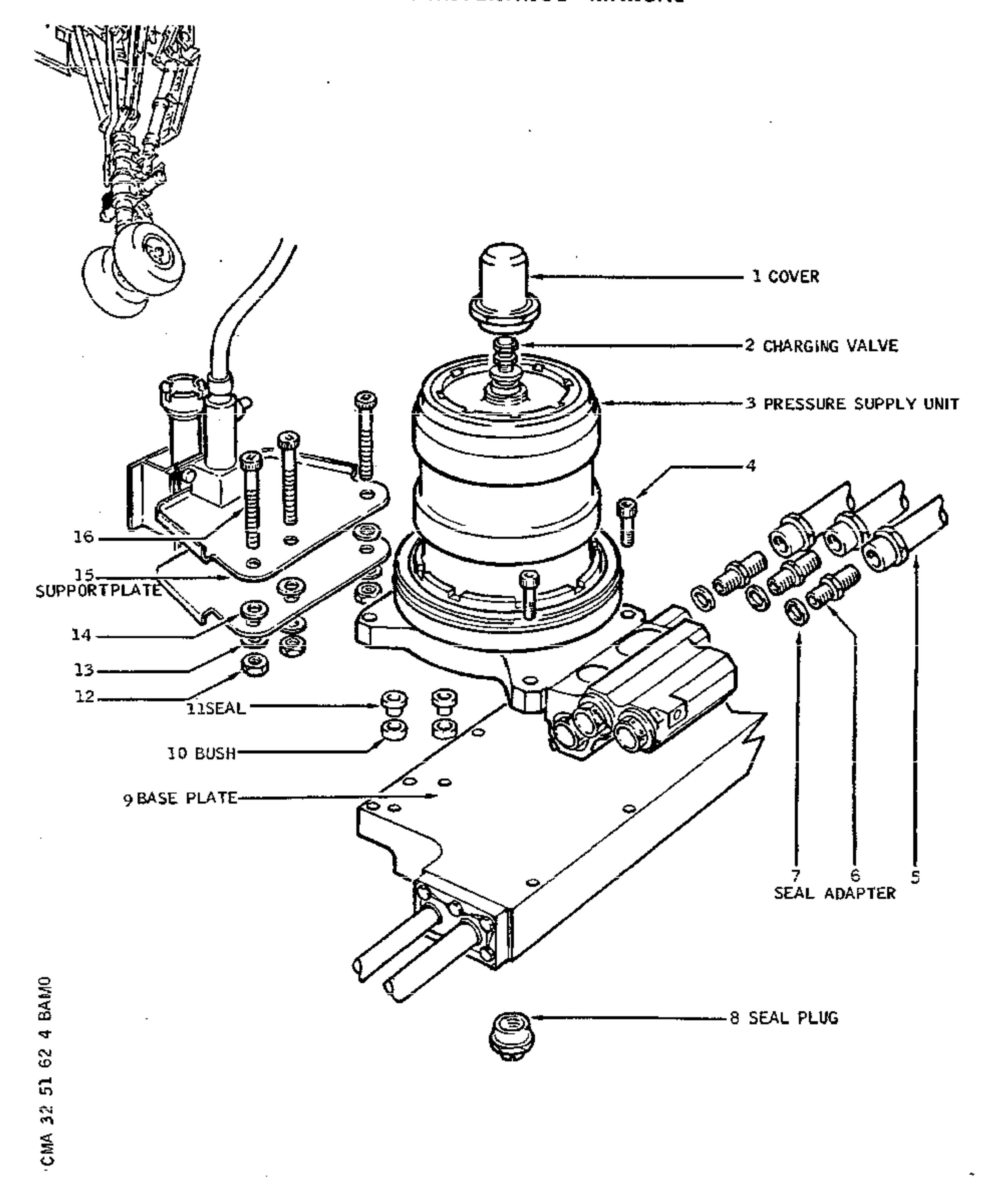
(b) Discard seals (11) and bushes (10).

(2) On replacement pressure supply unit

(a) Install and tighten adapters (6) equipped with new seals (7).

(b) Using a lint-free cloth impregnated with Product No.469, clean pressure supply unit (3) and baseplate (9) mating surfaces before bringing into contact.

(c) Coat pressure supply unit mating surface with Product No.106 before mounting on baseplate.



Pressure Supply Unit
Figure 401

Printed in England

WARNING : DO NOT COAT THE BORE ADJACENT AREAS. SEALS AND BUSHES MUST NOT BE IN CONTACT WITH PRODUCT No.106.

(d) Position bushes (10) on seals (11).

(e) Insert bushes and seals in corresponding bores on pressure supply unit.

WARNING : BUSHES MUST BE POSITIONED TOWARDS BASE PLATE.

E. Install

(1) Remove caps from hydraulic lines.

(2) Position pressure supply unit equipped with its seals (11) and bushes (10) on base plate (9).

R (3) Coat screws (4) with Product No.106.

(4) Install screws (4) without tightening.

(5) Position control box support plate (15).

R (6) Position washers (14) between control unit support plate (15) and base plate (9) lower face.

R (7) Coat screws (16) with Product No.106.

R (8) Insert screws (16). Make certain that washers (14) are in place.

R (9) Position washers (13). Screw and tighten nuts (12).

R (10) Tighten screws (4).

R (11) Wirelock screws (4) and (16) with lockwire Dia. 0.6 mm (0.024 in.).

R (12) Connect hydraulic lines. Wirelock with lockwire Dia. 0.8 mm (0.032 in.).

R (13) Connect electrical plug to control unit microswitch.

R (14) Make certain that working area is clean and clear of tools and miscellaneous items of equipment, and that no trace of hydraulic fluid remains.

R (15) Charge pressure supply unit (Ref. 32-51-62, Servicing).

R (16) Pressurize Green and Yellow hydraulic tanks (Ref.
R 29-13-00, Servicing).

R (17) Check fluid level in Green and Yellow hydraulic tanks Top up as required (Ref. 12-12-29).

R (18) Remove safety clips and tags and reset the circuit breakers.

F. Tests

(1) Make certain that nosewheels are centred.

(2) Remove safety key C22646 from interphone box R75.

(3) Connect electrical ground power unit and energize the
R aircraft electrical network (Ref. 24-41-00, Servicing).

R (4) Pressurize Green hydraulic system (Ref. 29-11-00,
R Servicing).

R (5) Make certain that NOSE WHEEL and STEERING warning
R lights are off. If necessary, press RESET pushbutton.

(6) Check pressure supply unit for leakage.

(7) Shut down and depressurize Green hydraulic system
R (Ref. 29-11-00, Servicing).

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Install safety key C22646 in interphone box R75.

(3) Close access doors.

PRESSURE SUPPLY UNIT - INSPECTION/CHECK

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Check of pressure supply unit charging pressure.

Check of steering system internal pressure with system in anti-shimmy configuration.

2. Check of Pressure Supply Unit Charging Pressure

A. Equipment and Materials.

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
AIR HYDRAULIC Tool Kit	
Lockwire - Dia 0.6 mm (0.024 in) (Corrosion Resistant Steel)	

B. Prepare

(1) Take the precautions discribed in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that brake selector lever is in NORM position.

(4) Make certain that the pedals, the control handles and the nosewheels are in zero position.

(5) Withdraw safety key C22646 from interphone box on nose gear leg.

(6) Check that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW 'A' SYS SUP	1-213	G 291	M16
RH UC WEIGHT SW 'A' SYS SUP		G 295	M18
LH UC WEIGHT SW 'B' SYS SUP	3-213	G 293	B 8
NOSE U/C W/SW 'B' SUP		G 296	D 8
NOSE WHEEL STEERING CONT	13-215	G 91	D 8
NOSE WHEEL STEERING IND		G 92	B 6
NOSE WHEEL STEERING SUP	15-216	G 93	A18

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Check

(1) Depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(2) Depressurize pressure supply unit by cutting lockwire on seal plug under base plate and slowly unscrewing seal plug.

(3) Cut lockwire and remove charging valve protective cover

(4) Remove charging valve cap.

(5) Install pressure gauge No 1 from AIR HYDRAULIC tool kit

on charging valve.

(6) Slowly unscrew charging valve control nut by one turn and a half.

WARNING: HOLD VALVE BODY WITH WRENCH WHILE ROTATING VALVE CONTROL NUT.

(7) Check on pressure gauge that pressure supply unit nitrogen pressure is 15 bar (217.56 psi).

(8) Under base plate, tighten seal plug and safety with lockwire.

R (9) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) On First Officer's instrument panel, make certain that NOSE WHEEL warning light is off. If warning light is on, press RESET pushbutton.

(11) Shut down and depressurize Green and Yellow hydraulic systems (Ref. 29-11-00, Servicing and 29-21-00, Servicing).

(12) Depressurize Green and Yellow hydraulic system tanks (Ref. 29-13-00, Servicing).

(13) Check on pressure gauge that pressure supply unit nitrogen pressure is 24.5 bar ± 1 bar (355.50 psi ± 14.5 psi).

(a) After 1 minute check that the pressure has not dropped by more than 6 bar (87.06 psi).

(b) After 10 minutes check that the pressure has not dropped by more than 1 bar (14.5 psi) as compared to the above.

(14) Remove pressure gauge and install valve cap.

(15) Install and tighten charging valve protective cover and safety with lockwire.

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Install safety key C22646 in interphone box on nose gear leg.

LANDING GEAR AND DOORS INDICATING - DESCRIPTION AND OPERATION

1. General

Landing gear and door indicating comprises the following :

A. Gears position indicating unit (G52).

B. Aural Warning System.

C. Visual Indicator.

R ** On A/C 001-006

D. A FAULT ANNUNCIATOR (G81).

E. Weight relays, controlled by the shock absorbers and associated with annex circuits.

2. Description

A. Gears Position Indicating Unit (Ref. Fig. 001)

(1) The lights indicating the various landing gear extension and retraction phases are grouped in three rows on the gears position indicating unit (G52) located on the First Officer's instrument panel.

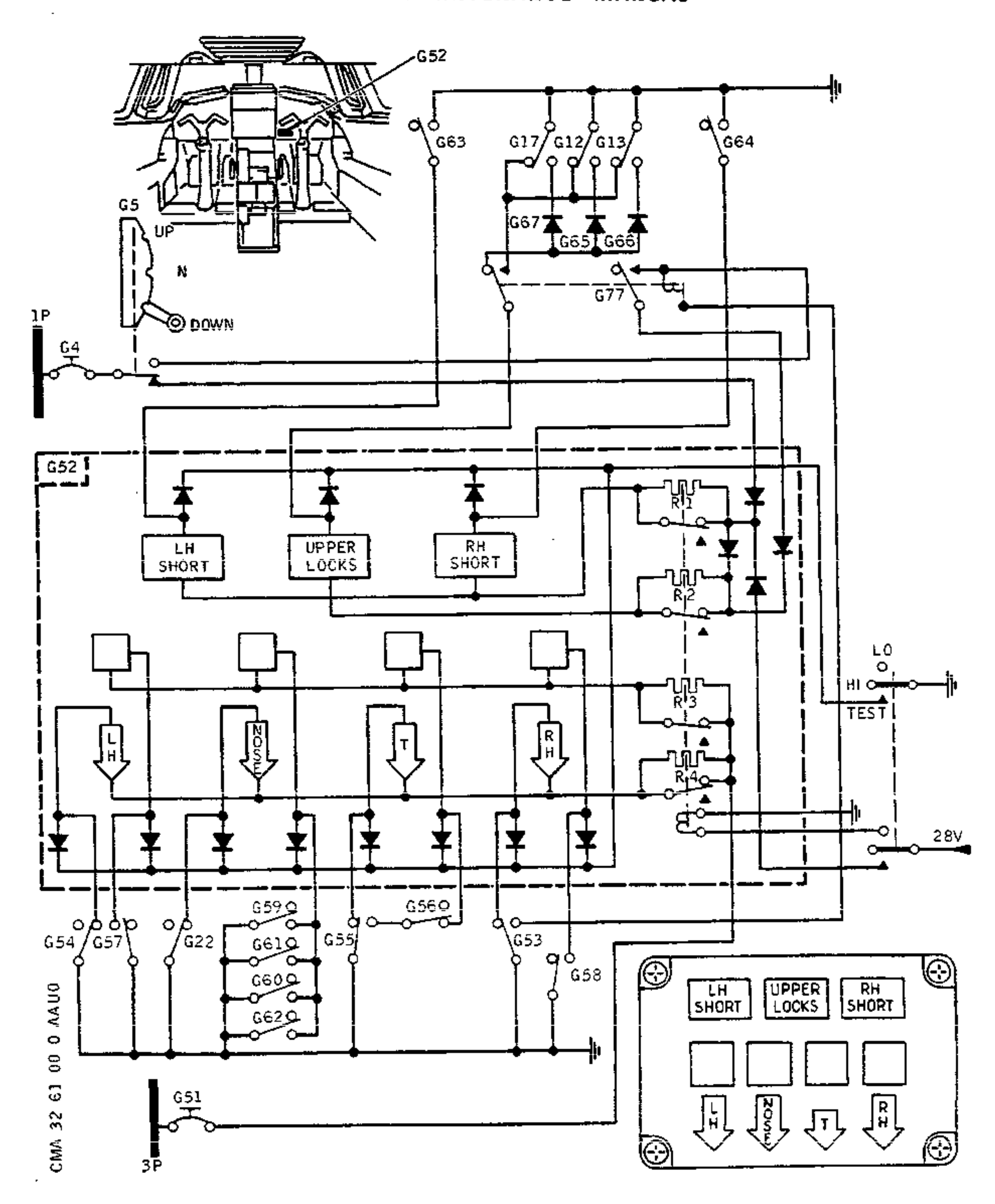
(a) The top row consists of three amber lights. Two of them (LH SHORT and RH SHORT) indicate withdrawal of the shortening lock on each main gear shock absorber. The third (UPPER LOCKS) indicates landing gear uplock release.

(b) The middle row consists of four red lights. Three of them indicate door movement. The fourth indicates the tail gear in the unlocked, extended or retracted position. As the gear and doors operate in parallel, door movement indicating may be assimilated with gear movement.

(c) The bottom row consists of four green arrows (LH, NOSE, T and RH). They indicate downlocking of the corresponding landing gear.

(2) Indicator Lamp Test

A D/B LIGHT selector switch with neutral HI position on the First Officer's side console serves for testing of lamps when placed in TEST position and for dimming of lamps when placed in LO position.



Landing Gear Downlocking Indication
Figure 001

B. Aural Warning

An aural warning system alerts the crew when the aircraft speed is less than 180 kts and at least two engines are idling : if the landing gear Normal control lever (switch (G5)) is in UP position or if one or all of the landing gears are not extended and downlocked with the landing gear Normal control lever in DOWN position.

C. Visual Indicating

In the event of gear indicating system failure, down-locking of main and nose landing gear struts may be checked through the visual indicators.

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D. FAULT ANNUNCIATOR (Ref. Fig. 002)

(1) A FAULT ANNUNCIATOR (G81) on Flight Engineer's panel indicates, in the event of landing gear retraction failure, the landing gear retraction phase in which failure occurred.

In the case of faulty operation, individual indicators in a group of nine illuminate as follows :

(a) Four indicator lights identify respectively the failure of any one of the nose gear LH, RH (NOSE DOORS) or main gear LH, RH (MAIN DOORS) doors to open.

(b) Two indicator lights indicate respectively whether the left-hand or right-hand main gear bogie beams LH, RH (BOGIE BEAM) are not aligned.

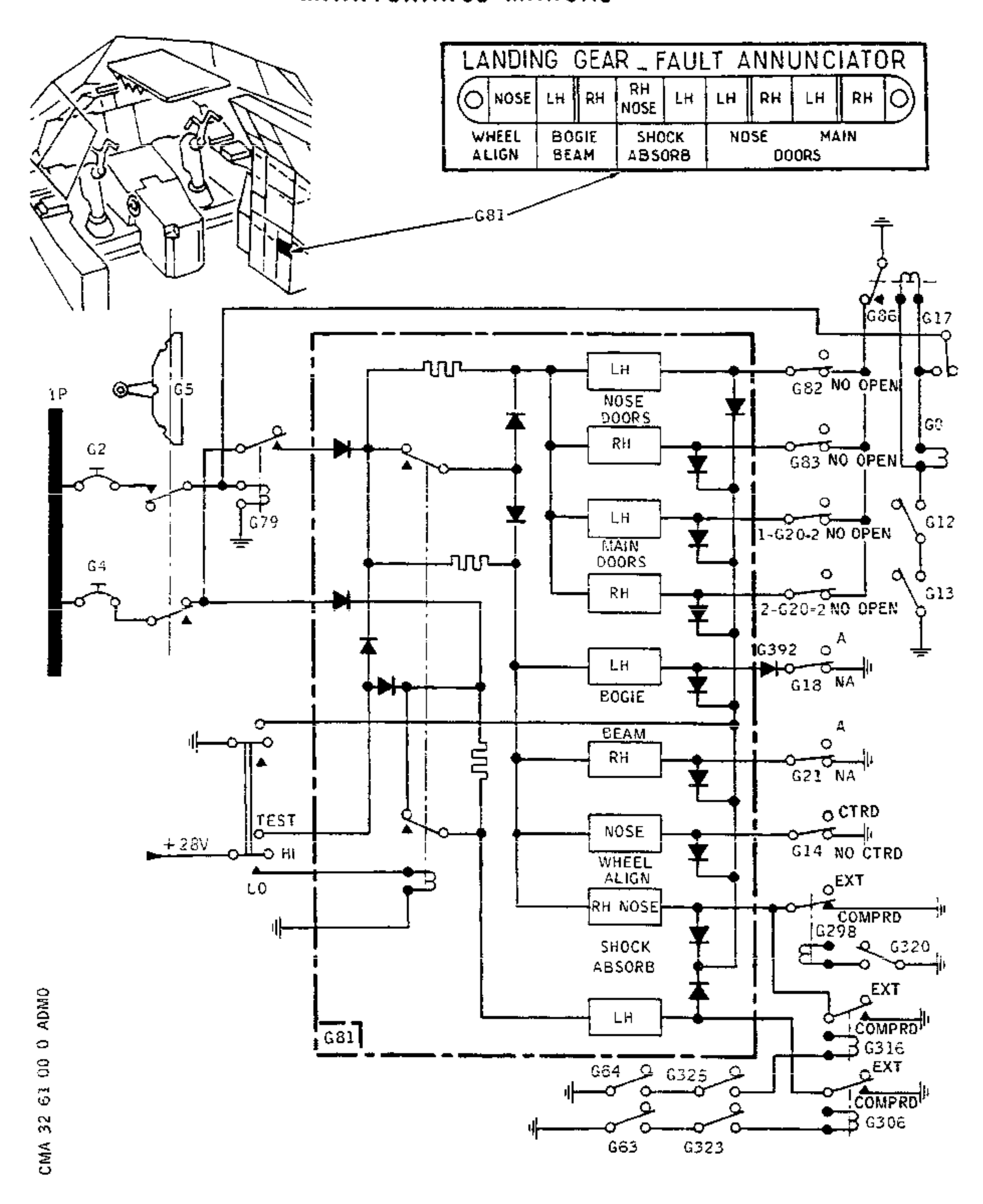
(c) An indicator light indicates that nose gear wheels NOSE (WHEEL ALIGN) are not aligned.

(d) A single indicator light RH-NOSE (SHOCK ABSORB) reveals any anomaly in nose gear and RH main gear shock absorber operation.

(e) An indicator light LH (SHOCK ABSORB) indicates any fault in operation of LH main landing gear shock absorber.

(2) Indicator Light Test

A three-position (TEST, HI, LO) switch located on Flight Engineer's panel 12-214, when placed in TEST position serves for testing condition of indicator



FAULT ANNUNCIATOR
Figure 002

lamps, and when placed in LO position serves for dimming of lamps.

E. A group of weight relays, controlled by microswitches on the shock absorbers, are included in the landing gear indicating system, but serve only to provide other systems with flight/ground information.

3. Operation
(Ref. Fig. 001)

A. Extension

When the landing gear Normal control lever is in DOWN position the various operational sequences are indicated as follows :

Amber LH SHORT, RH SHORT and UPPER LOCKS lights, comprising the upper row of gears position indicating unit (G52), illuminate.

Amber LH SHORT and RH SHORT lights illuminate when microswitches (G63 - G64) are closed and shock absorbers are shortened but not uplocked. These lights extinguish towards the end of the gear extension sequence, indicating : main landing gear shock absorbers downlocked. If one of the lights remains illuminated it indicates a risk of retraction of the shock absorber during taxying.

Amber UPPER LOCKS light illuminates by means of microswitches (G12, G13, G17) placed in parallel when the nose and main gears are uplocked. The light extinguishes at moment of nose and main gear uplock release.

(1) Door Opening

The middle row consists of four red lights.
Opening of main and nose gear main doors is indicated by the illumination of the red lights corresponding to green LH, NOSE, RH arrows.

(a) The red light corresponding to green LH arrow is controlled by microswitch (G57). It indicates uplock release of the left-hand main gear main door.

(b) The red light corresponding to green NOSE arrow is controlled in parallel by microswitches (G59 - G61) actuated by nose gear left hand door and microswitches (G60 - G62) actuated by nose gear right hand door. It indicates door uplock release.

(c) The red light corresponding to green RH arrow is controlled by microswitch (G58). It indicates uplock release of RH main gear main door.

With amber lights illuminated, the red lights corresponding to green LH, NOSE and RH arrows

indicate : doors moving to open position.

(2) Landing Gear Extension

(a) Landing gear moving

The red light corresponding to green T arrow, controlled by microswitches (G55 - G56) placed in series in its supply circuit, illuminates at moment of tail gear uplock release.

It indicates completion of the door opening sequence, and simultaneous extinction of amber UPPER LOCKS light denotes : doors open - landing gear and tail gear extending.

(b) Landing gear downlocked

(b1) The amber LH SHORT and RH SHORT lights extinguish, thus indicating : LH and RH main gear legs downlocked.

(b2) Four green arrows located immediately below each of the red lights, and bearing the caption of the landing gear concerned, illuminate separately when a microswitch is energized upon downlocking accomplishment of associated gear.

- The green LH arrow indicates that LH main landing gear is downlocked when contacts of microswitch (G54) are closed.
- The green NOSE arrow indicates that nose gear is downlocked, when contacts of microswitch (G22) are closed.
- The green T arrow indicates that tail gear is downlocked, when microswitch (G 55) contacts are closed.

NOTE : Simultaneously, action of the lock on microswitch (G55) opens the corresponding red light supply circuit.

- The green RH arrow indicates that RH main gear is downlocked, when microswitch (G53) contacts are closed.

(3) Door closing

(a) With the four green arrows illuminated, the red

light corresponding to green T arrow is extinguished ; when the red lights corresponding to green LH, NOSE, RH arrows are illuminated this denotes : doors moving to uplocked position.

(b) The red lights corresponding to green LH, NOSE, RH arrows extinguish in response to uplocking action of doors actuating LH main gear door microswitch (G57), RH main door gear microswitch (G58) nose gear LH door microswitches (G59, G61) and nose gear RH door microswitches (G60, G62).

(c) When all red and amber lights are extinguished the four illuminated green arrows indicate completion of gear extension.

They remain illuminated, so long as all gears are downlocked, even when the aircraft is on the ground, with landing gear Normal control lever (switch (G5)) in NEUTRAL position.

(Ref. Fig. 002)

(d) In the same manner, with landing gear Normal control lever (switch (G5)) in NEUTRAL position, the LH (SHOCK ABSORB) indicator on the FAULT ANNUNCIATOR (G81) illuminates, indicating : LH main gear shock absorber compressed. The indicator is extinguished when landing gear Normal control lever is placed in DOWN position.

B. Retraction

When landing gear Normal control lever (switch (G5)) is in UP position, the various sequences are indicated as follows :

(1) Door Opening

Red lights corresponding to green LH, NOSE, RH arrows on gears position indicating unit (G52) illuminate, thus indicating under the action of nose and main gear door uplock release : doors moving to open position.

(2) Landing gear retraction

(a) When all the doors are open the four green arrows extinguish upon landing gear and tail gear downlock release. At the same time the red light corresponding to green T arrow and the amber

UPPER LOCKS light (by action of the transfer relay (G77)) illuminate.

When illuminated, red lights corresponding to green LH, NOSE, T and RH arrows as well as amber UPPER LOCKS light, denote : doors open ; landing gear and tail gear retracting.

(b) Landing gear uplocking is indicated by the extinction of the amber UPPER LOCKS light. The extinction of red light corresponding to green T arrow denotes uplocking of tail gear.

(3) Door closing

(a) When illuminated, red lights corresponding to green LH, NOSE, RH arrows indicate : doors moving to closed position.

(b) When extinguished red lights corresponding to green LH, NOSE, RH arrows, indicate doors closed and locked.

Landing gear retraction phase is completed when all lights extinguish.

<u>NOTE</u> : In flight, with landing gear Normal control lever (switch (G5)) in NEUTRAL position, UPPER LOCKS circuit monitors gear uplocking. The amber light illuminates whenever a gear uplock is released.

(Ref. Fig.001 and 002)

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(4) FAULT ANNUNCIATOR

In flight when the landing gear Normal control lever (switch (G5)) is passed from NEUTRAL position, to UP position none of the indicator lights on the FAULT ANNUNCIATOR (G81) should illuminate except for a brief instant between positioning the lever to UP position and the start of movement of the doors, when the NOSE DOORS (LH - RH) and MAIN DOORS (LH - RH) indicators illuminate.

Alternatively, during landing gear retraction, illumination of one or several indicators denotes interruption of the landing gear retraction phase, as follows :

(a) The SHOCK ABSORB (LH) indicator illuminates as

soon as the landing gear Normal control lever is positioned on NEUTRAL indicating that left hand shock absorber is not extended.

(b) The SHOCK ABSORB (RH - NOSE) indicator illuminates denoting nose gear or RH main gear shock absorbers not extended.

(c) Once the nose gear and main gear shock absorbers are extended it is possible to place, the landing gear Normal control lever in the UP position. In such case :

(c1) The two NOSE DOORS (LH and RH) indicators illuminate denoting : nose gear doors closed with uplock released if the red light corresponding to green NOSE arrow on gears position indicating unit (G52) illuminates, or nose gear doors locked (if the same red light on indicating unit (G52) remains extinguished).

(c2) One of the two NOSE DOORS indicators (LH or RH) illuminated indicates : LH or RH nose door not open.

(c3) The two MAIN DOORS indicators (LH or RH) separately indicate or confirm either that : LH or RH main gear door not open, or LH or RH main gear door not uplocked, according to whether or not the red lights corresponding to green LH or RH arrows on indicating unit (G52) are illuminated.

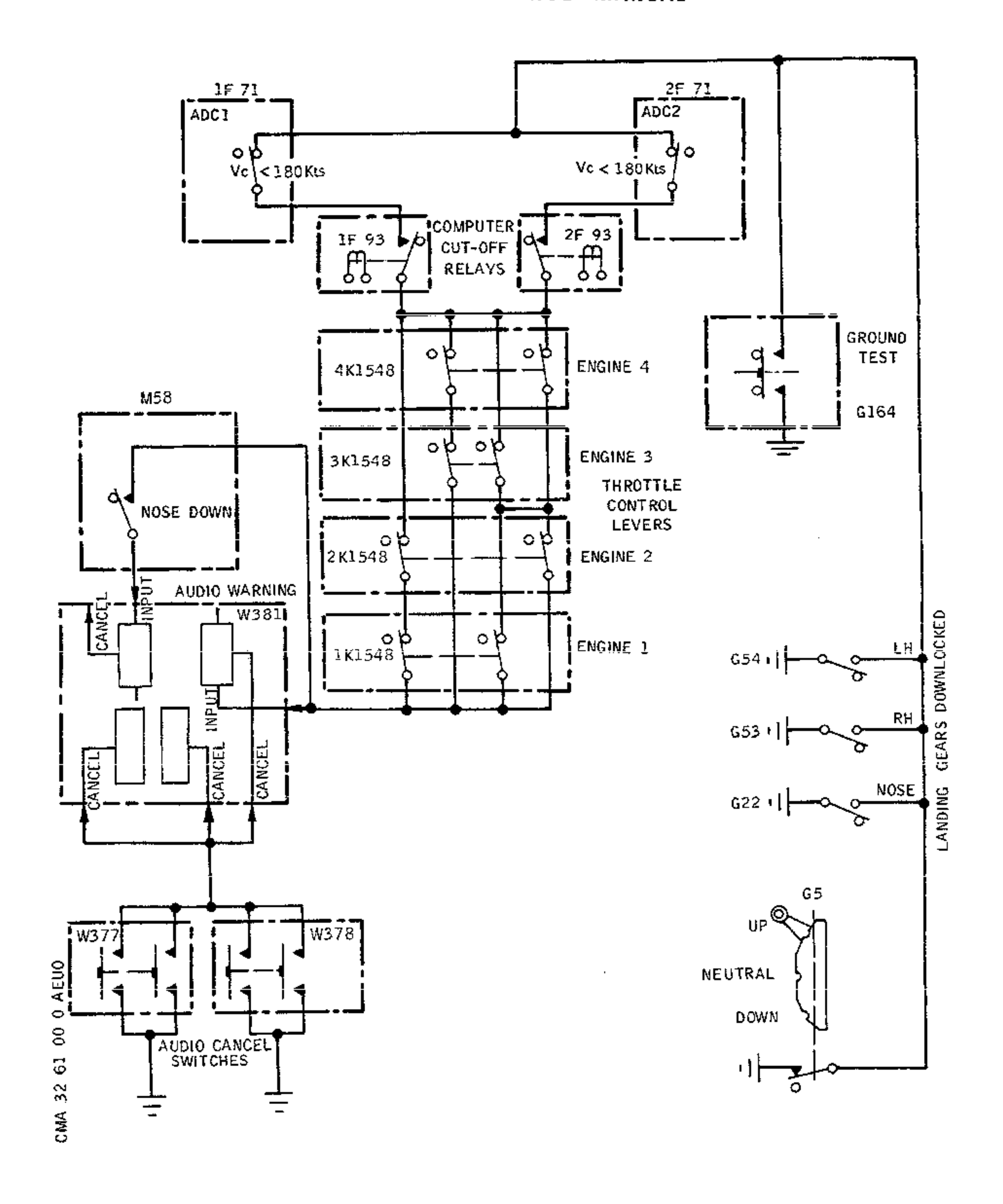
(c4) The WHEEL ALIGN (NOSE) indicator illuminated indicates : nose gear wheels not aligned.

(c5) The BOGIE BEAM (LH or RH) indicator illumiminated indicates : LH or RH main gear bogie beam not aligned.

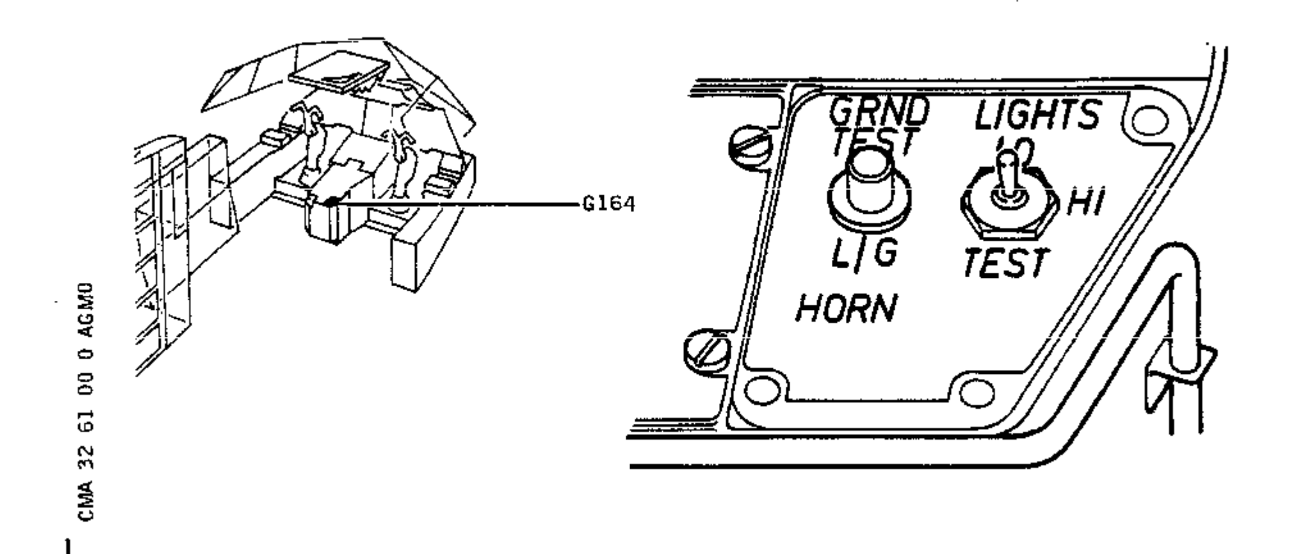
C. Aural Warning (Ref. Fig.003 and 004)

(1) An audio warning alerts the crew whenever, the aircraft flying at less than 180 kts and all, or at least two of the four engines idling (1K1548, 2K1548, 3K1548, 4K1548) (throttle control levers below 95 %), the following abnormal circumstances are encountered :

- the landing gear Normal control lever (switch (G5))



Aural Warning-Operation
Figure 003



Aural Warning Test
Figure 004

is in UP position.
- the landing gear Normal control lever (switch (G5)) is in DOWN position, but the nose gear (G22), one of the main landing gears (G53) or (G54) or all the landing gears are not downlocked.

NOTE : Relays (1F 93) or (2F 93) are energized as soon as air data computers (ADC) (1F 71 and 2F 71) respectively, are operating.

(2) The aural warning can be muted with the nose in up position, by means of AUDIO CANCEL pushbuttons (W 377, W 378).
- When the nose is in down position, transmitter unit (M 58) renders muting impossible.
- Following manual muting (AUDIO CANCEL), with the nose in up position, if the alarm conditions are still fulfilled, the aural warning comes on again automatically when the nose is lowered.

NOTE : If the conditions that triggered the alarm no longer prevail the system is automatically

reset.

(3) GRND TEST - L/G HORN pushbutton (G164) installed on the centre console serves for testing of the aural warning.

D. Visual Indicating (Ref. Fig. 005)

Downlocking of the nose gear telescopic drag strut and main gear telescopic brace struts can be checked in the event of failure of the landing gear indicating system.

(1) Nose Gear

(a) A visual indicator, located on the nose gear telescopic drag strut upper section, indicates locking of strut rod in retracted position (gear downlocked) by means of a light beam.

(b) The visual indicator comprises :

- two white indicator lamps
- a sighting assembly including two holes. One of the holes is closed off by a red transparent window serving for checking the lamps. This window is always unobstructed. The second hole serves for checking of drag strut downlocking.
- a hinged internal mask controlled through a latching dog on the drag strut inner rod.

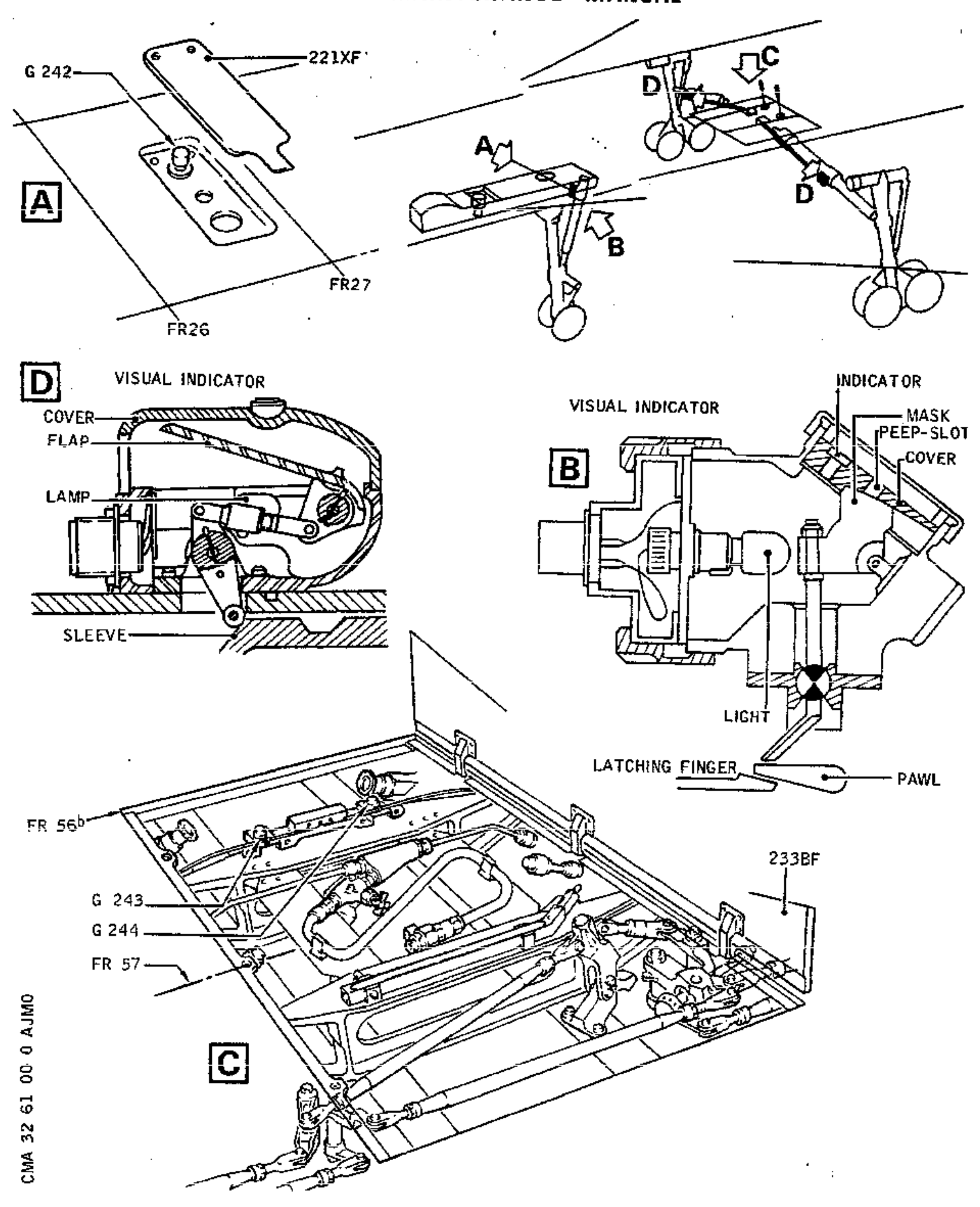
(c) Illumination of the two lamps is controlled through pushbutton (G242). Access to this pushbutton is gained through door 221XF.

The mask cuts off the light beam so long as the drag strut is not downlocked. As soon as downlocking is achieved, the mask is moved away from the window under the action of the drag strut inner rod latching fingers on a pawl. The white light beam can then be seen through the window.

(2) Main gear

(a) A visual indicator located on each main gear telescopic brace strut lower section, indicates through a light beam, downlocking of the extended strut (gear extended).

(b) Each visual indicator includes :



Landing Gear Downlocking Visual Indicating
Figure 005

- Two white indicator lamps.
- A reflecting flap operated by a lever actuated by the brace strut latching fingers.
- A cover whose top section is transparent.
- A red indicator on the side of each visual indicator.

(c) The two LH visual indicator lamps are controlled through pushbutton (G243).

(d) The two RH visual indicator lamps are controlled through pushbutton (G244).

(e) Both these pushbuttons are accessible through door 233BF.

(f) The flap cuts off the light beam so long as the brace strut is not downlocked. As soon as downlocking is achieved the flap is opened through the lever being actuated by the latching finger. The open flap reflects a beam of white light.

(g) The red indicator serves to check that the visual indicator lamps are in operating condition. A red dot is visible on the side of the visual indicator as soon as corresponding pushbutton (G243 or G244) is pressed.

5. Electrical Power Supplies

The gears position indicating unit (G52) and the FAULT ANNUNCIATOR (G81) (A/C 001-006 only) are supplied with 28V DC power.

SERVICE	BUSBAR	C/B PANEL
Gears position indicating unit power R ** On A/C 001-006 FAULT ANNUNCIATOR power	A MAIN 1P	15-215
Gears position indicating unit power	A ESS 3P	1-213

LANDING GEAR AND DOORS INDICATING - TROUBLE SHOOTING

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.
OBSERVE THE HYDRAULIC SAFETY PRECAUTIONS DESCRIBED IN 32-00-00, SERVICING.

1. General

A. To facilitate trouble shooting of landing gear and doors indicating system, the procedure has been divided into 5 sections :

Section 1 : Faults detected in the gears position indicating unit (G52) circuit.

Section 2 : Faults in aural warning system.

Section 3 : Faults in gear downlocking visual indicating system.

R ** On A/C 001-006

Section 4 : Faults detected in the FAULT ANNUNCIATOR (G81) circuit.

Section 5 : Faults concerning the landing gear weight relays.

NOTE : Each of the above trouble shooting sections is independent.

B. The following information is intended to enable faults found in flight or on the ground to be quickly rectified.

The defect can be isolated with the aid of the trouble shooting procedures and traced through OK and NOT OK paths to the appropriate charts or other specified rectification action as may be necessary. If a defect occurs perform the appropriate rectification action, then repeat the operation at which the defect was encountered to ensure the operation is OK.
Bracketed numbers in the procedures and charts indicate items on the component identification table (Ref. Table 101).
The table provides information, including component location, required for rectification. All procedures dealing with trouble shooting are based on the assumption that electrical wiring is serviceable, all associated circuit breakers are set and electrical power is available, unless otherwise stated.
If the fault is not rectified, check the wiring in accordance with the Wiring Diagram Manual (Ref. Table 101).

2. Prepare

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Access Platform 3.220 m (10 ft. 7 in.)	

B. Carry out preparation procedure described in 32-61-00, Adjustment/Test, Operational Test, paragraph 2.B.

C. Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW "A" SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW "A" SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK "A" SYS SUP		G 295	M18
LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW "B" SYS SUP		G 294	B 9
NOSE U/C W/SW "B" SUP		G 296	D 8

3. Trouble Shooting of Faults Detected in Gears Position Indicating Unit (G52) Circuit

```
*****************************************************
* On First Officer's instrument panel, on gears     *
* position indicating unit, green LH, NOSE, T and RH*
* arrows are on. IF                                 *
*****************************************************
    ||   |        ------------------------------------------------------
    ||   |       | The four green arrows (RH, NOSE, T and LH) are       |
    OK   NOT OK---| off with gears downlocked.                           |
    ||   |       | Replace UC POSN IND circuit breaker G51 [11].        |
    ||   |        ------------------------------------------------------
    ||   |        ------------------------------------------------------
    ||   |       | The four green arrows (RH, NOSE, T and LH) are       |
    OK   NOT OK---| on but dimmed.                                       |
    ||   |       | Replace gears position indicating unit G52 [12].     |
    ||   |        ------------------------------------------------------
    ||   |        ------------------------------------------------------
    ||   |       | One of the green arrows (LH, NOSE, T and RH)         |
    OK   NOT OK---| does not come on with gears downlocked.              |
    ||           | Ref. Chart 101.                                      |
    ||            ------------------------------------------------------
*****************************************************
* On First Officer's side console, place and hold   *
* D/B LIGHT switch in TEST position.                *
* On gears position indicating unit, amber LH SHORT *
* UPPER LOCKS and RH SHORT lights and the four red  *
* lights come on. IF                                *
*****************************************************
    ||   |        ------------------------------------------------------
    ||   |       | Light test faulty : the three amber lights (LH       |
    OK   NOT OK---| SHORT, UPPER LOCKS and RH SHORT) and the four        |
    ||   |       | red lights do not come on.                           |
    ||   |       | Ref. 33-14-00, Trouble Shooting.                     |
    ||   |        ------------------------------------------------------
    ||   |        ------------------------------------------------------
    ||   |       | Light test faulty : the four red lights come on      |
    OK   NOT OK---| but dimmed.                                          |
    ||   |       | Replace gears position indicating unit G52 [12].     |
    ||   |        ------------------------------------------------------
    ||   |        ------------------------------------------------------
    ||   |       | Light test faulty : one red light does not come      |
    OK   NOT OK---| on.                                                  |
    ||   |       | Replace gears position indicating unit G52 [12].     |
    ||   |        ------------------------------------------------------
    ||   |
    ||   |
```

```
    ||   |         ------------------------------------------------
    ||   |        | Light test faulty : the three amber lights (LH  |
    OK   NOT OK---| SHORT, UPPER LOCKS and RH SHORT) do not come on.|
    ||   |        | Ref. Chart 102.                                 |
    ||   |         ------------------------------------------------
    ||   |         ------------------------------------------------
    ||   |        | Light test faulty : amber UPPER LOCKS, LH SHORT,|
    OK   NOT OK---| RH SHORT or LH SHORT and RH SHORT lights do not |
    ||            | come on or are dimmed.                          |
    ||            | Replace gears position indicating unit G52 [12].|
    ||             ------------------------------------------------
*****************************************************
* On First Officer's side console, release D/B LIGHT*
* switch (amber UPPER LOCKS, LH SHORT and RH SHORT  *
* lights and the four red lights go out) then place *
* in LO position                                    *
* Green LH, NOSE, T and RH arrows are dimmed. IF    *
*****************************************************
    ||   |         ------------------------------------------------
    ||   |        | Dimming faulty : the four green arrows (LH, NOSE|
    OK   NOT OK---| T and RH) go off.                               |
    ||   |        | Replace gears position indicating unit G52 [12].|
    ||   |         ------------------------------------------------
    ||   |         ------------------------------------------------
    ||   |        | Dimming faulty : the four green arrows (LH, NOSE|
    OK   NOT OK---| T and RH) do not dim.                           |
    ||            | Ref. 33-14-00, Trouble Shooting.                |
    ||             ------------------------------------------------
*****************************************************
* Prepare as for gears position indicating unit     *
* functional test (Ref. 32-61-00, Adjustment/Test,  *
* paragraph 3).                                     *
* On First Officer's instrument panel, place landing*
* gear Normal control lever in UP position.         *
* On gears position indicating unit, lights come on *
* or go off in following sequence :                 *
* 1. Red lights corresponding to green LH, NOSE and *
*    RH arrows come on. IF                          *
*****************************************************
    ||   |         ------------------------------------------------
    ||   |        | Dimming faulty : red lights corresponding to    |
    OK   NOT OK---| green LH, NOSE and RH arrows do not come on.    |
    ||   |        | Replace gears position indicating unit G52 [12].|
    ||   |         ------------------------------------------------
    ||   |
    ||   |
    ||   |
    ||   |
    ||   |
    ||   |
```

```
   ||  |            ------------------------------------------------
   ||  |           | Gear retraction indicating faulty : red light   |
   ||  |           | corresponding to green LH or RH arrow does not  |
   ||  |           | come on.                                        |
   ||  |           | Replace :                                       |
   OK  NOT OK---| - for red light corresponding to green LH arrow,|
   ||              |   LH main gear door uplocked microswitch G57    |
   ||              |   [17].                                         |
   ||              | - for red light corresponding to green RH arrow,|
   ||              |   RH main gear door uplocked microswitch G58    |
   ||              |   [18].                                         |
   ||               ------------------------------------------------
*****************************************************
* 2. Green LH, NOSE, T and RH arrows go off.        *
*    Red light corresponding to green T arrow comes *
*    on.                                            *
*    Amber UPPER LOCKS light comes on. IF           *
*****************************************************
   ||  |            ------------------------------------------------
   ||  |           | Gear retraction indicating faulty : one of the  |
   ||  |           | four green arrows (LH, NOSE, T and RH) remains  |
   ||  |           | on.                                             |
   ||  |           | Replace :                                       |
   ||  |           | - for green LH arrow, LH gear downlocked micro- |
   OK  NOT OK---|   switch G54 [14].                              |
   ||  |           | - for green NOSE arrow, nose gear downlocked    |
   ||  |           |   microswitch G22 [10].                         |
   ||  |           | - for green T arrow, tail gear downlocked micro-|
   ||  |           |   switch G55 [15].                              |
   ||  |           | - for green RH arrow, RH gear downlocked micro- |
   ||  |           |   switch G53 [13].                              |
   ||  |            ------------------------------------------------
   ||  |            ------------------------------------------------
   ||  |           | Gear retraction indicating faulty : red light   |
   OK  NOT OK---| corresponding to green T arrow does not come on.|
   ||  |           | Ref. Chart 103.                                 |
   ||  |            ------------------------------------------------
   ||  |            ------------------------------------------------
   ||  |           | Gear retraction indicating faulty : amber UPPER |
   OK  NOT OK---| LOCKS light does not come on.                   |
   ||              | Ref. Chart 104.                                 |
   ||               ------------------------------------------------
   ||
   ||
```

```
    ||
    OK
    ||
*****************************************************
* 3. Red light corresponding to green T arrow goes  *
*    off.                                           *
*    Amber UPPER LOCKS light goes off. IF           *
*****************************************************
    ||   |
    ||   |       -----------------------------------------------------
    ||   |      | Gear retraction indicating faulty : red light       |
    OK  NOT OK---| corresponding to green T arrow does not go off.    |
    ||   |      | Replace tail gear uplocked microswitch G56 [16].    |
    ||   |       -----------------------------------------------------
    ||   |       -----------------------------------------------------
    ||   |      | Gear retraction indicating faulty : amber UPPER     |
    OK  NOT OK---| LOCKS light does not go off.                       |
    ||          | Ref. Chart 105.                                     |
    ||           -----------------------------------------------------
*****************************************************
* 4. Red lights corresponding to green LH, NOSE and *
*    RH arrows go off. IF                           *
*****************************************************
    ||   |       -----------------------------------------------------
    ||   |      | Gear retraction indicating faulty ; red light       |
    ||   |      | corresponding to green LH or RH arrow does not      |
    ||   |      | go off.                                             |
    ||   |      | Replace :                                           |
    OK  NOT OK---| - for red light corresponding to green LH arrow,   |
    ||   |      |   LH main gear door uplocked microswitch G57        |
    ||   |      |   [17].                                             |
    ||   |      | - for red light corresponding to green RH arrow,    |
    ||   |      |   RH main gear door uplocked microswitch G58        |
    ||   |      |   [18].                                             |
    ||   |       -----------------------------------------------------
    ||   |       -----------------------------------------------------
    ||   |      | Gear retraction indicating faulty : red light       |
    OK  NOT OK---| corresponding to green NOSE arrow does not go      |
    ||          | off.                                                |
    ||          | Ref. Chart 106.                                     |
    ||           -----------------------------------------------------
    ||
    ||
```

```
   ||
   OK
   ||
*****************************************************
* On First Officer's instrument panel, place landing*
* gear Normal control lever in NEUTRAL position.    *
* On First Officer's side console place and hold D/B*
* LIGHT switch in TEST position.                    *
* All lights on gears position indicating unit G52  *
* are on. IF                                        *
*****************************************************
   ||   |
   ||   |       ----------------------------------------------------
   OK   NOT OK---| Light test faulty : one of the four green arrows|
   ||           | (LH, NOSE, T and RH) does not come on.          |
   ||           | Replace gears position indicating unit G52 [12].|
                ----------------------------------------------------
*****************************************************
* Release D/B LIGHT switch then place in LO position*
* WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR *
*           TRAVEL RANGES ARE CLEAR.                *
* On First Officer's instrument panel, place landing*
* gear Normal control lever in DOWN position.       *
* On gears position indicating unit, lights come on *
* or go off in following sequence :                 *
* 1. Amber LH SHORT, UPPER LOCKS and RH SHORT lights*
*    come on. IF                                    *
*****************************************************
   ||   |
   ||   |       ----------------------------------------------------
   OK   NOT OK---| Gear extension indicating faulty : the three    |
   ||   |       | amber lights (LH SHORT, UPPER LOCKS and RH      |
   ||   |       | SHORT) do not come on.                          |
   ||   |       | Replace gears position indicating unit G52 [12].|
   ||   |       ----------------------------------------------------
   ||   |       ----------------------------------------------------
   ||   |       | Gear extension indicating faulty : amber LH     |
   OK   NOT OK---| SHORT and RH SHORT lights do not come on.       |
   ||   |       | Replace gears position indicating unit G52 [12].|
   ||   |       ----------------------------------------------------
   ||   |       ----------------------------------------------------
   ||   |       | Gear extension indicating faulty : amber UPPER  |
   OK   NOT OK---| LOCKS light does not come on.                   |
   ||   |       | Replace upper locks transfer relay G77 [25].    |
   ||   |       ====================================================
   ||   |
   ||   |
```

```
     ||   |         -----------------------------------------------------
     ||   |        | Gear extension indicating faulty : amber LH         |
     ||   |        | SHORT or RH SHORT light does not come on.           |
     ||   |        | Replace :                                           |
     OK   NOT OK---| - for amber LH SHORT light, LH shortening lock     |
     ||            |   microswitch G63 [23].                             |
     ||            | - for amber RH SHORT light, RH shortening lock     |
     ||            |   microswitch G64 [24].                             |
     ||             -----------------------------------------------------
*****************************************************
* 2. Red lights corresponding to green LH, NOSE and *
*    RH arrows come on.                             *
* 3. Red light corresponding to green T arrow comes *
*    on.                                            *
*    Amber UPPER LOCKS light goes off. IF           *
*****************************************************
     ||   |         -----------------------------------------------------
     ||   |        | Gear extension indicating faulty : amber UPPER      |
     OK   NOT OK---| LOCKS light does not go off.                        |
     ||            | Ref. Chart 107.                                     |
     ||             -----------------------------------------------------
*****************************************************
* 4. Green NOSE and T arrows come on.               *
*    Red light corresponding to green T arrow goes  *
*    off.                                           *
*    Green LH and RH arrows come on.                *
*    Amber LH SHORT and RH SHORT lights go off. IF  *
*****************************************************
     ||   |         -----------------------------------------------------
     ||   |        | Gear extension indicating faulty : green NOSE       |
     OK   NOT OK---| arrow does not come on.                             |
     ||   |        | Replace nose gear downlocked microswitch G22        |
     ||   |        | [10].                                               |
     ||   |         -----------------------------------------------------
     ||   |         -----------------------------------------------------
     ||   |        | Gear extension indicating faulty : green T arrow    |
     ||   |        | does not come on and corresponding red light        |
     OK   NOT OK---| remains off.                                        |
     ||   |        | Replace tail gear downlocked microswitch G55        |
     ||   |        | [15].                                               |
     ||   |         -----------------------------------------------------
     ||   |
     ||   |
```

```
      ||    |             ------------------------------------------------
      ||    |            | Gear extension indicating faulty : green LH or |
      ||    |            | RH arrow does not come on.                     |
      ||    |            | Replace :                                      |
      OK   NOT OK---|    - for green LH arrow, LH gear downlocked micro- |
      ||    |            |   switch G54 [14].                             |
      ||    |            | - for green RH arrow, RH gear downlocked micro-|
      ||    |            |   switch G53 [13].                             |
      ||    |             ------------------------------------------------
      ||    |             ------------------------------------------------
      ||    |            | Gear extension indicating faulty : amber LH    |
      ||    |            | SHORT or RH SHORT light does not go off.       |
      ||    |            | Replace :                                      |
      OK   NOT OK---|    - for amber LH SHORT light, LH shortening lock |
      ||                 |   microswitch G63 [23].                        |
      ||                 | - for amber RH SHORT light, RH shortening lock |
      ||                 |   microswitch G64 [24].                        |
      ||                  ------------------------------------------------
 *****************************************************
 * 5. Red lights corresponding to green LH, NOSE and *
 *    RH arrows go off.                              *
 *                                                   *
 * On First Officer's instrument panel, place landing*
R * gear Normal control lever in NEUTRAL position.    *
 * On First Officer's side console, place D/B LIGHT  *
 * switch in HI position.                            *
 * Carry out Close-Up procedure described in         *
 * 32-61-00, Adjustment/Test, paragraph 3. E.        *
 *****************************************************
      ||
      ||
 *****************************************************
 * End of trouble shooting of faults detected in     *
 * gears position indicating unit G52 circuit.       *
 *****************************************************
```

```
**************************************
* ONE OF THE GREEN ARROWS (LH, NOSE, *
* T AND RH) DOES NOT COME ON WITH    *
* GEARS DOWNLOCKED                   *
**************************************

*****************************************************
* On First Officer's side console, place and hold   *
* D/B LIGHT switch in TEST position.                *
* On gears position indicating unit, green arrow    *
* concerned comes on.                               *
*****************************************************
    ||     |   --------------------------------------------------
    YES    NO-----| Replace gears position indicating unit G52 [12].|
    ||            --------------------------------------------------
    ||
    ||            --------------------------------------------------
    ||            | Replace :                                      |
    ||            | - for green LH arrow, LH gear downlocked micro- |
    ||            |   switch G54 [14]                              |
    ||            | - for green NOSE arrow, nose gear downlocked   |
    -------------|   microswitch G22 [10].                        |
                  | - for green T arrow, tail gear downlocked micro-|
                  |   switch G55 [15].                             |
                  | - for green RH arrow, RH gear downlocked micro- |
                  |   switch G53 [13].                             |
                  --------------------------------------------------
```

Chart 101 (Sheet 1 of 1)

```
*************************************
* LIGHT TEST FAULTY : THE THREE AMBER*
* LIGHTS (LH SHORT, UPPER LOCKS AND  *
* RH SHORT) DO NOT COME ON.          *
*************************************

*****************************************************
* On First Officer's side console, place and hold   *
* D/B LIGHT switch in TEST position.                *
* On circuit breaker panel 15-215, make certain that*
* UC SELECTOR LOWER CONT circuit breaker G4 (map    *
* ref. A9) is set.                                  *
* On First Officer's instrument panel, place landing*
* gear Normal control lever in DOWN position.       *
* The three amber lights (LH SHORT, UPPER LOCKS and *
* RH SHORT) come on.                                *
*****************************************************
    ||     |     ---------------------------------------------------
    YES    NO-----| Replace gears position indicating unit G52 [12] |
    ||           ---------------------------------------------------
    ||
    ||           ---------------------------------------------------
    -------------| Ref. 33-14-00, Trouble Shooting.                 |
                 ---------------------------------------------------
```

Chart 102 (Sheet 1 of 1)

```
    **************************************-------------------------------
R   * GEAR RETRACTION INDICATING FAULTY :*| GROUND EQUIPMENT REQUIRED   |
    * RED LIGHT CORRESPONDING TO GREEN T *|-----------------------------|
    * ARROW DOES NOT COME ON.            *| DESCRIPTION        PART NO. |
    **************************************|-----------------------------|
                                          | MULTIMETER        ________  |
                                          | ACCESS PLATFORM   ________  |
                                          | 4.060m (13ft. 7in.)  ____   |
                                          -------------------------------

    ******************************************************
    * Extend landing gear : on First Officer's           *
    * instrument panel, place landing gear Normal        *
    * control lever in DOWN position then in NEUTRAL     *
    * position as soon as gear is downlocked.            *
    * Shut down and depressurize Green hydraulic system *
R   * (Ref. 29-11-00, Servicing).                        *
    * Disconnect tail gear uplocked microswitch G56 [16]*
    * plug and check for continuity between microswitch *
    * terminals A and B. Continuity                      *
    ******************************************************
        ||     |       ----------------------------------------------
        YES    NO-----| Replace tail gear uplocked microswitch G56 [16] |
        ||             ----------------------------------------------
        ||
        ||             ----------------------------------------------
        -------------| Replace tail gear downlocked microswitch G55  |
                      | [15].                                         |
                       ----------------------------------------------
```

Chart 103 (Sheet 1 of 1)

```
*************************************-----------------------------
* GEAR RETRACTION INDICATING FAULTY :*| GROUND EQUIPMENT REQUIRED  |
* AMBER UPPER LOCKS LIGHT DOES NOT   *|----------------------------|
* COME ON.                           *| DESCRIPTION       PART NO. |
**************************************|----------------------------|
                                      | MULTIMETER                 |
                                      | CIRCUIT BREAKER   ________ |
                                      | SAFETY CLIPS               |
                                      | ACCESS PLATFORM   ________ |
                                      | 3.220m (10ft. 7in.)  ____  |
                                      ------------------------------

****************************************************
* On First Officer's side console, place D/B LIGHT  *
* switch in HI position.                            *
* Repeat landing gear retraction indicating tests.  *
* Amber UPPER LOCKS light comes on.                 *
****************************************************
    ||     |       ------------------------------------------------
    NO     YES----| Replace gears position indicating unit G52 [12] |
    ||             ------------------------------------------------
****************************************************
* In zone 123, open access door 123-AB              *
* On shelf 3-123, check that there is 28VDC between *
* connector UT1838 terminals 15A and 15B.           *
****************************************************
    ||     |      ***********************************************
    YES    NO-----* On connector UT1838, check for continuity    *
    ||            * between terminal 15B and ground. Continuity  *
    ||            ***********************************************
    ||               ||      |         -------------------------
    ||               ||      NO-------| Replace RH gear downlocked |
    ||               ||               | microswitch G53 [13].      |
    ||               ||                -------------------------
    ||               ||                -------------------------
    ||               YES--------------| Replace landing gear Normal|
    ||                                | control switch G5 [01].    |
    ||                                 -------------------------
****************************************************
* Replace upper locks transfer relay G77 [25].      *
* Repeat landing gear retraction indicating tests   *
* Amber UPPER LOCKS light comes on.                 *
****************************************************
    ||     |       ------------------------------------------------
    ||     NO-----| Replace gears position indicating unit G52 [12].|
    ||             ------------------------------------------------
    ||             ------------------------------------------------
    YES-----------| Replaced upper locks transfer relay was faulty. |
                   ------------------------------------------------
```

Chart 104 (Sheet 1 of 1)

GEAR RETRACTION INDICATING FAULTY : AMBER UPPER LOCKS LIGHT DOES NOT GO OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	________
ACCESS PLATFORM 3.220m (10ft. 7in.)	____

Extend landing gear : On First Officer's instrument panel, place landing gear Normal control lever in DOWN position then in NEUTRAL position as soon as gear is downlocked.
Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).
On LH main gear uplock 3406, disconnect LH gear uplocked microswitch G12 [02] plug, then lock uplock hook in uplocked position.
Check that there is not continuity between micro-switch G12 terminals D and F. IF

- NOT OK — Replace LH gear uplocked microswitch G12 [02].
- OK — continue:

On RH main gear uplock 3407, disconnect RH gear uplocked microswitch G13 [03] plug then lock uplock hook in uplocked position
Check that there is not continuity between micro-switch G13 terminals D and F. IF

- NOT OK — Replace RH gear uplocked microswitch G13 [03].
- OK — Replace nose gear uplocked microswitch G17 [05].

NOTE : After replacement of faulty microswitch :
- pressurize Yellow hydraulic system (Ref. 29-11-00, Servicing)
- perform landing gear Emergency extension procedure (Ref. 32-32-00, Adjustment/Test)
- on LH and RH main gear uplocks 3406 and 3407 tilt hooks downwards to fully open position.

Chart 105 (Sheet 1 of 1)

```
*************************************-----------------------------
* GEAR RETRACTION INDICATING FAULTY :*| GROUND EQUIPMENT REQUIRED |
* RED LIGHT CORRESPONDING TO GREEN   *|---------------------------|
* NOSE ARROW DOES NOT GO OFF.        *| DESCRIPTION      PART NO. |
*************************************|---------------------------|
                                     | MULTIMETER       ________ |
                                     | ACCESS PLATFORM           |
                                     | 3.220m (10ft. 7in.) ____  |
                                     -----------------------------

    ****************************************************
    * Extend landing gear : On First Officer's         *
    * instrument panel, place landing gear Normal      *
R   * control lever in DOWN position, then in NEUTRAL  *
    * position as soon as gear is downlocked.          *
    * Shut down and depressurize Green hydraulic system *
    * (Ref. 29-11-00, Servicing).                      *
    * On nose gear LH door forward uplock 3506,        *
    * disconnect nose gear LH door uplocked microswitch *
    * G59 [19] plug, then lock uplock hook in uplocked *
    * position.                                        *
    * Check that there is not continuity between micro- *
    * switch G59 terminals A and B. IF                 *
    ****************************************************
        ||     |     ----------------------------------------------
        OK     NOT OK-| Replace nose gear LH door uplocked microswitch |
        ||            | G59 [19].                                      |
        ||           ----------------------------------------------
    ****************************************************
    * On nose gear LH door aft uplock 3508, disconnect *
    * nose gear LH door uplocked microswitch G61 [21]  *
    * plug, then lock uplock hook in uplocked position. *
    * Check that there is not continuity between micro- *
    * switch G61 terminals A and B. IF                 *
    ****************************************************
        ||     |     ----------------------------------------------
        OK     NOT OK-| Replace nose gear LH door uplocked microswitch |
        ||            | G61 [21].                                      |
        ||           ----------------------------------------------
        ||
        ||
        ||
      SHEET 2
```

Chart 106 (Sheet 1 of 2)

```
    ||
    OK
    ||
*****************************************************
* On nose gear RH door forward uplock 3507,         *
* disconnect nose gear RH door uplocked microswitch *
* G60 [20] plug, then lock uplock hook in uplocked  *
* position.                                         *
* Check that there is not continuity between micro- *
* switch G60 terminals A and B. IF                  *
*****************************************************
    ||     |
    OK     NOT OK-| Replace nose gear RH door uplocked microswitch |
    ||            | G60 [20].                                      |
    ||
    ||
    -------------| Replace nose gear RH door uplocked microswitch |
                 | G62 [22].                                      |
```

NOTE : After replacement of faulty microswitch :
- pressurize Yellow hydraulic system (Ref. 29-11-00, Servicing).
- perform landing gear door Emergency opening procedure (Ref. 32-32-00, Adjustment/Test).
- on nose gear LH and RH door uplocks, 3506, 3508 and 3507 tilt hooks downwards to fully open position.

Chart 106 (Sheet 2 of 2)

```
*************************************-------------------------------
* GEAR EXTENSION INDICATING FAULTY : *| GROUND EQUIPMENT REQUIRED   |
* AMBER UPPER LOCKS LIGHT DOES NOT GO*|-----------------------------|
* OFF                               *| DESCRIPTION       PART NO.  |
*************************************|-----------------------------|
                                     | MULTIMETER        ________  |
                                     | ACCESS PLATFORM             |
                                     | 3.220m (10ft. 7in.)  ____   |
                                     -------------------------------

*****************************************************
* Shut down and depressurize Green hydraulic system *
* (Ref. 29-11-00, Servicing).                       *
* On LH main gear uplock 3406, disconnect LH gear   *
* uplock microswith G12 [02] plug.                  *
* Check that there is not continuity between micro- *
* switch G12 terminals E and F. IF                  *
*****************************************************
    ||     |     ----------------------------------------------
    OK     NOT OK-| Replace LH gear uplocked microswitch G12 [02]   |
    ||           ----------------------------------------------
*****************************************************
* On RH main gear uplock 3407, disconnect RH gear   *
* uplock microswitch G13 [03].                      *
* Check that there is not continuity between micro- *
* switch G13 terminals E and F. IF                  *
*****************************************************
    ||     |     ----------------------------------------------
    OK     NOT OK-| Replace RH gear uplocked microswitch G13 [03].  |
    ||           ----------------------------------------------
    ||           ----------------------------------------------
    -------------| Replace nose gear uplocked microswitch G17 [05].|
                 ----------------------------------------------
```

Chart 107 (Sheet 1 of 1)

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4. Trouble Shooting of Faults in Aural Warning System

```
**************************************************
* Prepare as for aural warning functional test     *
* (Ref. 32-61-00, Adjustment/Test, paragraph 4).   *
* Make certain that droop nose is not in DOWN      *
* position (Ref. 27-62-00, Servicing).             *
* On centre console :                              *
* 1. On ADC control panel, place ADC1 switch in ON *
*    position.                                     *
* 2. Press and hold GRND TEST - L/G HORN pushbutton *
*    Aural warning sounds. IF                      *
**************************************************
     ||   |          ---------------------------------------------------
     OK   NOT OK---| Aural warning test faulty : aural warning does   |
     ||             | not sound                                        |
     ||             | Ref. Chart 111.                                  |
     ||              ---------------------------------------------------
**************************************************
* 3. On ADC control panel, place ADC1 TEST selector *
*    switch in 1 position.                         *
*    Aural warning stops sounding when speed       *
*    exceeds 180kt (read on airspeed indicator on  *
*    Captain's instrument panel). IF               *
**************************************************
     ||   |          ---------------------------------------------------
     ||   |         | Aural warning stops sounding at speed other than|
     OK   NOT OK---| 180kt.                                            |
     ||   |         | Replace air data computer (ADC) No.1 1F71 [56].  |
     ||   |          ---------------------------------------------------
     ||   |          ---------------------------------------------------
     ||   |         | Aural warning does not stop sounding when air-   |
     OK   NOT OK---| craft speed exceeds 180kt (computed by ADC1 ;    |
     ||             | ADC2 switch being in OFF position).              |
     ||             | Ref. Chart 112.                                  |
     ||              ---------------------------------------------------
**************************************************
* 4. On ADC control panel :                        *
*    - place ADC1 TEST switch in NORM position.    *
*      Aural warning sounds                        *
*    - place ADC1 switch in OFF position           *
*      Aural warning stops sounding. IF            *
**************************************************
     ||   |          ---------------------------------------------------
     ||   |         | Aural warning continues to sound with ADC1       |
     OK   NOT OK---| switch in OFF position.                          |
     ||             | Replace ADC control relay 1F93 [58].             |
     ||              ---------------------------------------------------
```

```
    ||
    OK
    ||
*****************************************************
* 5. On ADC control panel, place ADC2 switch in ON  *
*    position.                                      *
*    Aural warning sounds. IF                       *
*****************************************************
    ||  |            -----------------------------------------------------
    ||  |           | Aural warning does not sound for speed less than|
    OK  NOT OK---| 180kt, computed by air data computer (ADC) No.2 |
    ||              | Ref. Chart 113.                                 |
    ||               -----------------------------------------------------
*****************************************************
* 6. On ADC control panel, place ADC2 TEST selector *
*    switch in 1 position.                          *
*    Aural warning stops sounding when speed        *
*    exceeds 180kt (read on airspeed indicator on   *
*    First Officer's instrument panel). IF          *
*****************************************************
    ||  |            -----------------------------------------------------
    ||  |           | Aural warning does not stop sounding or stops   |
    OK  NOT OK---| sounding at a speed other than 180kt.           |
    ||              | Replace air data computer (ADC) No.2 2F71 [57]. |
    ||               -----------------------------------------------------
*****************************************************
* 7. On ADC control panel, place ADC2 TEST selector *
*    switch in NORM position.                       *
*    Aural warning sounds.                          *
* 8. Release GRND TEST - L/G HORN pushbutton.       *
*    Aural warning stops sounding.                  *
* WARNING : DO NOT PRESSURIZE GREEN HYDRAULIC       *
*           SYSTEM.                                 *
* On First Officer's instrument panel, place landing*
* gear Normal control lever in UP position.         *
* Aural warning sounds. IF                          *
*****************************************************
    ||  |            -----------------------------------------------------
    ||  |           | Aural warning does not sound when landing gear  |
    OK  NOT OK---| Normal control lever is in UP position.         |
    ||              | Replace landing gear Normal control switch G5   |
    ||              | [01].                                           |
    ||               -----------------------------------------------------
    ||
    ||
    ||
    ||
    ||
    ||
    ||
    ||
```

OK

Place two throttle control levers at a time in MAX THRUST position then back to idle position as shown in table below :

THROTTLE CONTROL LEVERS	
MAX THRUST	IDLE
1 - 2	3 - 4
1 - 3	2 - 4
1 - 4	2 - 3
2 - 3	1 - 4
2 - 4	1 - 3
3 - 4	1 - 2

Aural warning continues to sound for all six possible combinations. IF

OK — NOT OK: Aural warning stops sounding when throttle control levers 1 - 2 are in MAX THRUST position and 3 - 4 in idle position. Ref. Chart 114.

OK — NOT OK: Aural warning stops sounding when throttle control levers 1 - 3 are in MAX THRUST position and 2 - 4 in idle position. Ref. Chart 115.

OK — NOT OK: Aural warning stops sounding when throttle control levers 1 = 4 are in MAX THRUST position and 2 - 3 in idle position. Replace forward thrust microswitch box (ENG. 3)
R 3K1548 [62].

OK — NOT OK: Aural warning stops sounding when throttle control levers 2 - 3 are in MAX THRUST position and 1 - 4 in idle position. Replace forward thrust microswitch box (ENG. 1)
R 1K1548 [60].

```
   ||   |
   ||   |       ---------------------------------------------------
   ||   |      | Aural warning stops sounding when throttle        |
   OK   NOT OK---| control levers 3 - 4 are in MAX THRUST position |
   ||          | and 1 - 2 in idle position.                       |
   ||          | Ref. Chart 116.                                   |
   ||           ---------------------------------------------------
*****************************************************
* Perform operations described in aural warning     *
* functional test paragraph 4. C. (6) to 4. C. (10) *
* (b) inclusive (Ref. 32-61-00, Adjustment/Test).   *
* Aural warning stops sounding only when nose gear  *
* is downlocked. IF                                 *
*****************************************************
   ||   |       ---------------------------------------------------
   OK   NOT OK---| Replace nose gear downlocked microswitch G22    |
   ||          | [10].                                             |
   ||           ---------------------------------------------------
*****************************************************
* Perform operations described in aural warning     *
* functional test paragraph 4. C. (10) (c) to 4. C. *
* (16) (b) inclusive (Ref. 32-61-00, Adjustment/    *
* Test).                                            *
* Aural warning stops sounding only when RH main    *
* gear is downlocked. IF                            *
*****************************************************
   ||   |       ---------------------------------------------------
   OK   NOT OK---| Replace RH gear downlocked microswitch G53 [13].|
   ||           ---------------------------------------------------
*****************************************************
* Perform operations described in aural warning     *
* functional test paragraph 4. C. (16) (c) to 4. C. *
* (22) (b) inclusive (Ref. 32-61-00, Adjustment/    *
* Test).                                            *
* Aural warning stops sounding only when LH main    *
* gear is downlocked. IF                            *
*****************************************************
   ||   |       ---------------------------------------------------
   OK   NOT OK---| Replace LH gear downlocked microswitch G54 [14].|
   ||           ---------------------------------------------------
   ||
   ||
```

```
    ||
    OK
    ||
*****************************************************
* Perform operations described in aural warning     *
* functional test paragraph 4. C. (22) (c) to 4. C. *
* (28) inclusive. IF                                *
*****************************************************
    ||  |
    ||  |        -----------------------------------------------------
    ||  |       | Aural warning not inhibited when Captain's or      |
    OK  NOT OK---| First Officer's AUDIO CANCEL pushbutton pressed    |
    ||          | (droop nose in UP position).                       |
    ||          | Ref. 31-23-00, Trouble Shooting.                   |
    ||           -----------------------------------------------------
*****************************************************
* Place droop nose in DOWN position (Ref. 27-62-00, *
* Servicing).                                       *
* Aural warning sounds. IF                          *
*****************************************************
    ||  |
    ||  |        -----------------------------------------------------
    ||  |       | Aural warning inhibited when droop nose in DOWN    |
    OK  NOT OK---| position.                                          |
    ||          | Ref. Chart 117.                                    |
    ||           -----------------------------------------------------
*****************************************************
* On centre console :                               *
* - release GRND TEST - L/G HORN pushbutton.        *
*   Aural warning stops sounding.                   *
* - on ADC control panel, place ADC2 switch in OFF  *
*   position.                                       *
* Perform close-up operations described in aural    *
* warning functional test (Ref. 32-61-00, Adjustment*
* Test, paragraph 4. D.).                           *
*****************************************************
    ||
    ||
*****************************************************
* End of trouble shooting of aural warning system.  *
*****************************************************
```

```
**************************************-------------------------------
* AURAL WARNING TEST FAULTY : AURAL  *| GROUND EQUIPMENT REQUIRED   |
* WARNING DOES NOT SOUND             *|-----------------------------|
**************************************| DESCRIPTION        PART NO. |
                                      |-----------------------------|
                                      | MULTIMETER         ________ |
                                      | CIRCUIT BREAKER             |
                                      | SAFETY CLIPS       ________ |
                                      -------------------------------

*****************************************************
* On centre console :                               *
* - on ADC control panel, place ADC2 switch in ON   *
*   position.                                       *
* - press then release GRND TEST - L/G HORN push-   *
*   button                                          *
*   Aural warning sounds while pushbutton is pressed*
*****************************************************
    ||     |
    ||     |     ***********************************************
    ||     |     * On shelf 6-215, remove air data computer (ADC)  *
    NO     YES----* No.1 1F71 [56].                                *
    ||           * Check for continuity between computer terminals *
    ||           * CB-1 and CB-2. Continuity.                      *
    ||           ***********************************************
    ||                  ||      |      ------------------------------
    ||                  YES     NO------| Replace ADC No.1 1F71 [56] |
    ||                  ||             ------------------------------
    ||                  ||             ------------------------------
    ||                  ---------------| Replace ADC control relay  |
R   ||                                 | 1F93 [58].                 |
    ||                                 ------------------------------
*****************************************************
* WARNING : DO NOT PRESSURIZE GREEN HYDRAULIC SYSTEM*
* On First Officer's instrument panel, place landing*
* gear Normal control lever in UP position          *
* Aural warning sounds.                             *
*****************************************************
    ||     |     -----------------------------------------------
    YES    NO-----| Ref. 31-23-00, Trouble Shooting.             |
    ||           -----------------------------------------------
    ||           -----------------------------------------------
    -------------| Replace GRND TEST - L/G HORN pushbutton G164  |
                 | [31].                                         |
                 -----------------------------------------------
```

Chart 111 (Sheet 1 of 1)

```
**************************************
* AURAL WARNING DOES NOT STOP        *
* SOUNDING WHEN AIRCRAFT SPEED       *
* EXCEEDS 180kt (COMPUTED BY ADC1 ;  *
* ADC2 SWITCH BEING IN OFF POSITION).*
**************************************

*****************************************************
* On centre console, on ADC control panel, place    *
* ADC2 switch in ON position and ADC2 TEST selector *
* switch in 1 position.                             *
* Aural warning stops sounding.                     *
*****************************************************
    ||    |     ---------------------------------------------------
    YES   NO-----| Replace ADC No.1 1F71 [56].                      |
    ||          ---------------------------------------------------
    ||          ---------------------------------------------------
    -------------| Replace ADC control relay 2F93 [59].             |
                ---------------------------------------------------
```

Chart 112 (Sheet 1 of 1)

```
************************************-------------------------------
* AURAL WARNING DOES NOT SOUND FOR   *| GROUND EQUIPMENT REQUIRED  |
* SPEED LESS THAN 180kt, COMPUTED BY *|----------------------------|
* AIR DATA COMPUTER (ADC) No.2       *| DESCRIPTION       PART NO. |
**************************************|----------------------------|
                                      | MULTIMETER       ________  |
                                      | CIRCUIT BREAKER            |
                                      | SAFETY CLIPS     ________  |
                                      ------------------------------

*****************************************************
* On shelf, 6-216, remove air data computer (ADC)   *
* No.2 2F71 [57].                                   *
* Check for continuity between computer terminals   *
* CB-1 and CB-2. Continuity                         *
*****************************************************
    ||    |        ---------------------------------------------------
    YES   NO------| Replace ADC No.2 2F71 [57].                      |
    ||             ---------------------------------------------------
    ||             ---------------------------------------------------
    --------------| Replace ADC control relay 2F93 [59].             |
                   ---------------------------------------------------
```

Chart 113 (Sheet 1 of 1)

```
*************************************-------------------------------
* AURAL WARNING STOPS SOUNDING WHEN  *| GROUND EQUIPMENT REQUIRED  |
* THROTTLE CONTROL LEVERS 1 - 2 ARE  *|----------------------------|
* IN MAX THRUST POSITION AND 3 - 4 IN*| DESCRIPTION       PART NO. |
* IDLE POSITION                      *|----------------------------|
*************************************| MULTIMETER        ________ |
                                      -------------------------------

*****************************************************
* On panel 10-211, disconnect forward thrust micro- *
* switch box (Eng 4) connector  U-2030              *
* (Ref. 76-15-12, Removal/Installation). Check for  *
* continuity between connector U-2030 terminals e   *
* and f with throttle control lever No.4 in idle    *
* position. Continuity                              *
*****************************************************
    ||     |      -----------------------------------------------
    YES    NO-----| Replace forward thrust microswitch box (Eng 4) |
    ||            | 4K1548 [63].                                   |
    ||            -----------------------------------------------
    ||            -----------------------------------------------
    --------------| Replace forward thrust microswitch box (Eng 3) |
                  | 3K1548 [62].                                   |
                  -----------------------------------------------
```

Chart 114 (Sheet 1 of 1)

```
*************************************
* AURAL WARNING STOPS SOUNDING WHEN  *
* THROTTLE CONTROL LEVERS 1 - 3 ARE  *
* IN MAX THRUST POSITION AND 2 - 4 IN*
* IDLE POSITION.                     *
*************************************

***********************************************
* On centre console, place throttle control    *
* lever No.2 in MAX THRUST position and No.1   *
* in idle position                             *
* Aural warning sounds.                        *
***********************************************
    ||     |
    YES    NO-----|-----------------------------------------------------
    ||            | Replace forward thrust microswitch box (Eng 4)  |
    ||            | 4K1548 [63].                                    |
    ||            -----------------------------------------------------
    ||            -----------------------------------------------------
    --------------| Replace forward thrust microswitch box (Eng 2)  |
                  | 2K1548 [61].                                    |
                  -----------------------------------------------------
```

Chart 115 (Sheet 1 of 1)

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```
*************************************-------------------------------
* AURAL WARNING STOPS SOUNDING WHEN  *| GROUND EQUIPMENT REQUIRED    |
* THROTTLE CONTROL LEVERS 3 - 4 ARE  *|------------------------------|
* IN MAX THRUST POSITION AND 1 - 2 IN*| DESCRIPTION        PART NO.  |
* IDLE POSITION                      *|------------------------------|
*************************************| MULTIMETER         ________  |
                                      -------------------------------

*****************************************************
* On panel 10-211, disconnect forward thrust micro- *
* switch box (Eng 1) connector U-2035               *
* (Ref. 76-15-12, Removal/Installation). Check for  *
* continuity between connector U-2035 terminals e   *
* and f with throttle control lever No.1 in idle    *
* position. Continuity                              *
*****************************************************
    ||     |       ---------------------------------------------------
    YES    NO-----| Replace forward thrust microswitch box (Eng 1)  |
    ||            | 1K1548 [60].                                    |
    ||             ---------------------------------------------------
    ||             ---------------------------------------------------
    -------------| Replace forward thrust microswitch box (Eng 2)  |
                 | 2K1548 [61].                                    |
                  ---------------------------------------------------
```

Chart 116 (Sheet 1 of 1)

```
*************************************---------------------------------
* AURAL WARNING INHIBITED WHEN DROOP *| GROUND EQUIPMENT REQUIRED     |
* NOSE IN DOWN POSITION.             *|-------------------------------|
**************************************| DESCRIPTION        PART NO.   |
                                      |-------------------------------|
                                      | MULTIMETER          ________  |
                                      ---------------------------------

*****************************************************
* On shelf 7-216, remove audio warning unit W381    *
* [65].                                             *
* On rack connector check that for continuity       *
* between terminals AA-39 and AB-39. Continuity     *
*****************************************************
    ||    |            ----------------------------------------------------
    YES   NO-----| Replace droop nose position transmitter unit M58|
    ||                 | [64].                                            |
    ||                 ----------------------------------------------------
    ||                 ----------------------------------------------------
    -------------| Replace audio warning unit W381 [65].           |
                       ----------------------------------------------------
```

Chart 117 (Sheet 1 of 1)

5. Trouble shooting of Faults in Gear Downlocking Visual Indicating System

```
**********************************************************
* Open access door 221YF.                                *
* Press pushbutton G242.                                 *
* On nose gear telescopic drag strut downlock indicator, *
* a red dot and white light beam are visible. IF         *
**********************************************************
    ||     |     ------------------------------------------
    OK     NOT OK-| Red dot not visible when pushbutton G242 pressed|
    ||            | Ref. Chart 121.                               |
    ||           ------------------------------------------
**********************************************************
* Close access door 221YF.                               *
* Open access door 233BF                                 *
* Successively press pushbuttons G243 and G244.          *
* On downlock indicator of each main gear telescopic     *
* brace strut, a red dot and white light beam are visible*
* IF                                                     *
**********************************************************
    ||     |     ------------------------------------------
    ||     |      | Red dot not visible on LH main gear brace strut |
    OK     NOT OK-| downlock indicator with pushbutton G243 pressed.|
    ||     |      | Ref. Chart 122.                                 |
    ||     |     ------------------------------------------
    ||     |     ------------------------------------------
    ||     |      | Red dot not visible on RH main gear brace strut |
    OK     NOT OK-| downlock indicator with pushbutton G244 pressed.|
    ||            | Ref. Chart 123.                                 |
    ||           ------------------------------------------
**********************************************************
* Close access door 233BF.                               *
**********************************************************
    ||
    ||
**********************************************************
* End of trouble shooting of gear downlocking visual     *
* indicating system.                                     *
**********************************************************
```

```
***************************************-------------------------------
* RED DOT NOT VISIBLE WHEN PUSHBUTTON*| GROUND EQUIPMENT REQUIRED   |
* G242 PRESSED                       *|-----------------------------|
**************************************| DESCRIPTION       PART NO.  |
                                      |-----------------------------|
                                      | MULTIMETER        ________  |
                                      | CIRCUIT BREAKER             |
                                      | SAFETY CLIPS      ________  |
                                      -------------------------------

*****************************************************
* Open access door 233BF.                           *
* Press pushbutton G243.                            *
* Red dot visible on LH main gear telescopic brace  *
* strut downlock indicator.                         *
*****************************************************
    ||    |        ----------------------------------------------------
    YES   NO-----| Replace UC DOWNLOCK VISUAL IND circuit breaker |
    ||             | G241 [32].                                       |
    ||             ----------------------------------------------------
*****************************************************
* Trip safety and tag UC DOWNLOCK VISUAL IND        *
* circuit breaker G241 (circuit breaker panel 3-213,*
* map ref. C8).                                     *
* In zone 715, on nose gear visual indicator G245,  *
* disconnect electrical connector and connect a     *
* voltmeter between plug terminals C (+) and A      *
* (ground).                                         *
* Remove safety clip and tag and reset circuit      *
* breaker tripped above.                            *
* Press pushbutton G242 : voltmeter indicates 28VDC.*
*****************************************************
    ||    |        ----------------------------------------------------
    YES   NO-----| Replace nose gear visual indicator pushbutton   |
    ||             | G242 [33].                                       |
    ||             ----------------------------------------------------
    ||
    ||             ----------------------------------------------------
    -------------| Replace nose gear visual indicator G245 [36].   |
                   ----------------------------------------------------
```

Chart 121 (Sheet 1 of 1)

```
*************************************-------------------------------
* RED DOT NOT VISIBLE ON LH MAIN GEAR*| GROUND EQUIPMENT REQUIRED  |
* BRACE STRUT DOWNLOCK INDICATOR WITH*|----------------------------|
* PUSHBUTTON G243 PRESSED           *| DESCRIPTION       PART NO. |
*************************************|----------------------------|
                                     | MULTIMETER                 |
                                     | CIRCUIT BREAKER   ________ |
                                     | SAFETY CLIPS      ________ |
                                     ------------------------------

*****************************************************
* Trip, safety and tag UC DOWNLOCK VISUAL IND       *
* circuit breaker G241 (circuit breaker panel 3-213,*
* map ref. C8).                                     *
* In zone 733, on LH gear visual indicator G246,    *
* disconnect electrical connector and connect a     *
* voltmeter between plug terminals C (+) and A      *
* (ground).                                         *
* Remove safety clip and tag and reset circuit      *
* breaker tripped above.                            *
* Press pushbutton G243 : voltmeter indicates 28VDC.*
*****************************************************
    ||    |        ---------------------------------------------
    YES   NO------| Replace LH gear visual indicator pushbutton G243|
    ||            | [34].                                         |
    ||             ---------------------------------------------
    ||
    ||             ---------------------------------------------
    -------------| Replace LH gear visual indicator G246 [37].   |
                   ---------------------------------------------
```

Chart 122 (Sheet 1 of 1)

```
**************************************-------------------------------
* RED DOT NOT VISIBLE ON RH MAIN GEAR*| GROUND EQUIPMENT REQUIRED  |
* BRACE STRUT DOWNLOCK INDICATOR WITH*|----------------------------|
* PUSHBUTTON PRESSED.                *| DESCRIPTION       PART NO. |
**************************************|----------------------------|
                                      | MULTIMETER        ________ |
                                      | CIRCUIT BREAKER            |
                                      | SAFETY CLIPS      ________ |
                                      ------------------------------

************************************************
* Trip, safety and tag UC DOWNLOCK VISUAL IND  *
* circuit breaker G241 (circuit breaker panel 3-213,*
* map ref. C8).                                *
* In zone 743, on RH gear visual indicator G247,*
* disconnect electrical connector and connect a *
* voltmeter between plug terminals C (+) and A *
* (ground).                                    *
* Remove safety clip and tag and reset circuit *
* breaker tripped above : voltmeter indicates 28VDC.*
************************************************
    ||    |      ----------------------------------------------
    YES   NO-----| Replace RH gear visual indicator pushbutton G244|
    ||           | [35].                                        |
    ||           ----------------------------------------------
    ||
    ||           ----------------------------------------------
    -------------| Replace RH gear visual indicator G247 [38].  |
                 ----------------------------------------------
```

Chart 123 (Sheet 1 of 1)

R On A/C 001-006

6. Trouble Shooting of Faults Detected in FAULT ANNUNCIATOR (G81) Circuit

```
***************************************************
* On First Officer's instrument panel, make certain *
* that landing gear Normal control lever is in      *
* NEUTRAL position.                                 *
* On Flight Engineer's panel, on FAULT ANNUNCIATOR  *
* LH (SHOCK ABSORB) light is on.  IF                *
***************************************************
   ||    |          ----------------------------------------------------
   ||    |         | LH (SHOCK ABSORB) light is off with gear down-     |
   OK    NOT OK---| locked and shock absorbers compressed.             |
   ||    |         | Ref. Chart 131.                                    |
   ||    |          ----------------------------------------------------
   ||    |          ----------------------------------------------------
   OK    NOT OK---| LH (SHOCK ABSORB) light is on but dimmed.          |
   ||    |         | Replace FAULT ANNUNCIATOR G81 (27).                |
   ||    |          ----------------------------------------------------
  ***************************************************
  * On Flight Engineer's panel 12-214, place and hold *
  * LIGHTS switch in TEST position.                   *
  * On FAULT ANNUNCIATOR all lights are on.  IF       *
  ***************************************************
   ||    |          ----------------------------------------------------
   ||    |         | Light test faulty : On FAULT ANNUNCIATOR all       |
   OK    NOT OK---| lights except LH (SHOCK ABSORB) light remain off   |
   ||    |         | Ref. Chart 132.                                    |
   ||    |          ----------------------------------------------------
   ||    |          ----------------------------------------------------
   ||    |         | Light test faulty : On FAULT ANNUNCIATOR one or    |
   OK    NOT OK---| several lights remain off or are dimmed.           |
   ||    |         | Replace FAULT ANNUNCIATOR G81 (27).                |
   ||    |          ----------------------------------------------------
***************************************************
* Release LIGHTS switch. Perform preparation        *
* procedures described in FAULT ANNUNCIATOR         *
* functional test (Ref. 32-61-00, Adjustment/Test,  *
* paragraphs 6. A and 6. B).                        *
* On Flight Engineer's panel 12-214, place LIGHTS   *
* switch in TEST position then release.             *
* On FAULT ANNUNCIATOR all lights come on while     *
* switch is in TEST position. IF                    *
***************************************************
   ||    |          ----------------------------------------------------
   ||    |         | Light test faulty : On FAULT ANNUNCIATOR, LH       |
   OK    NOT OK---| (SHOCK ABSORB) light remains off.                  |
   ||              | Replace FAULT ANNUNCIATOR G81 (27).                |
   ||               ----------------------------------------------------
```

```
    ||
    OK
    ||
*****************************************************
*  On Flight Engineer's panel 12-214, place LIGHTS  *
*  switch in LO position.                           *
*  Perform nose gear doors not-open indicating      *
*  test as described in 32-61-00, Adjustment/Test,  *
*  paragraph 6. C. (2).                             *
*  LH and RH (NOSE DOORS) lights come on dimmed     *
*  during door closing.  IF                         *
*****************************************************
    ||  |
    ||  |      --------------------------------------------------
    ||  |     | Dimming faulty : LH and RH (NOSE DOORS) are on   |
    OK  NOT OK---| but not dimmed.                               |
    ||  |     | Ref. 33-14-00, Trouble Shooting.                 |
    ||  |      --------------------------------------------------
    ||  |      --------------------------------------------------
    ||  |     | Nose Gear LH door not-open indicating faulty.    |
    OK  NOT OK---| LH (NOSE DOORS) light remains off.            |
    ||  |     | Ref. Chart 133.                                  |
    ||  |      --------------------------------------------------
    ||  |      --------------------------------------------------
    ||  |     | Nose Gear RH door not-open indicating faulty.    |
    OK  NOT OK---| RH (NOSE DOORS) light remains off.            |
    ||        | Replace nose gear door opening limit switch G83.|
    ||         --------------------------------------------------
*****************************************************
*  Perform main gear doors not-open indicating      *
*  test as described in 32-61-00, Adjustment/Test,  *
*  paragraph 6. C. (3).                             *
*  LH and RH (MAIN DOORS) lights come on during door *
*  closing.  IF                                     *
*****************************************************
    ||  |
    ||  |      --------------------------------------------------
    ||  |     | LH main gear door not-open indicating faulty.    |
    OK  NOT OK---| LH (MAIN DOORS) light remains off.            |
    ||  |     | Replace LH gear door opening limit switch 1G20-2|
    ||  |     | [07].                                            |
    ||  |      --------------------------------------------------
    ||  |      --------------------------------------------------
    ||  |     | RH main gear door not-open indicating faulty     |
    OK  NOT OK---| RH (MAIN DOORS) light remains off.            |
    ||        | Replace LH gear door opening limit switch 2G20-2|
    ||        | [08].                                            |
    ||         --------------------------------------------------
    ||
```

```
   ||
   OK
   ||
*****************************************************
* Perform bogie beam not-aligned indicating test as *
* described in 32-61-00, Adjustment/Test, paragraph *
* 6. C. (4).                                        *
* LH and RH (BOGIE BEAM) lights come on when bogie  *
* beams are not aligned.  IF                        *
*****************************************************
   ||    |
   ||    |          -------------------------------------------------
   ||    |         |LH bogie beam not-aligned indicating faulty.     |
   OK    NOT OK---|LH (BOGIE BEAM) light remains off.                |
   ||    |         |Ref. Chart 134.                                  |
   ||    |          -------------------------------------------------
   ||    |
   ||    |          -------------------------------------------------
   ||    |         |RH bogie beam not-aligned indicating faulty.     |
   OK    NOT OK---|RH (BOGIE BEAM) light remains off.                |
   ||              |Replace RH gear bogie beam aligned microswitch   |
   ||              |G21 [09].                                        |
   ||               -------------------------------------------------
*****************************************************
* Perform nose and RH main gear shock absorbers not *
* extended and nose gear wheels not centred         *
* indicating test as described in 32-61-00, Adjust- *
* ment/Test, paragraph 6. C (5).                    *
* RH-NOSE (SHOCK ABSORB) light comes on when nose or*
* RH main gear shock absorber is compressed.        *
* NOSE (WHEEL ALIGN) light comes on when nose gear  *
* wheels are not centred.                           *
*****************************************************
   ||    |
   ||    |
   ||    |          -------------------------------------------------
   ||    |         |Nose gear shock absorber compressed indicating   |
   OK    NOT OK---|faulty. RH-NOSE (SHOCK ABSORB) light remains off.|
   ||    |         |Ref. Chart 135.                                  |
   ||    |          -------------------------------------------------
   ||    |
   ||    |          -------------------------------------------------
   ||    |         |Nose gear wheel misalignment indicating faulty.  |
   OK    NOT OK---|NOSE (WHEEL ALIGN) light remains off.             |
   ||    |         |Replace nosewheel centred microswitch G14 [04].  |
   ||    |          -------------------------------------------------
   ||    |
   ||    |          -------------------------------------------------
   ||    |         |RH main gear shock absorber not-extended         |
   OK    NOT OK---|indicating faulty.  RH-NOSE (SHOCK ABSORB) light  |
   ||              |remains off.                                     |
   ||              |Ref. Chart 136.                                  |
   ||               -------------------------------------------------
   ||
```

```
    ||
    OK
    ||
*******************************************************
*  Perform LH main gear shock absorber not-extended   *
*  indicating test as described in 32-61-00, Adjust-  *
*  ment/Test, paragraph 6. C. (6).                    *
*  LH (SHOCK ABSORB) light comes on when shock        *
*  absorber is compressed.  IF                        *
*******************************************************
    ||   |     -------------------------------------------------
    ||   |    | LH main gear shock absorber not-extended        |
    OK   NOT OK---| indicating faulty.  LH (SHOCK ABSORB) light |
    ||        | remains off.                                    |
    ||        | Ref. Chart 137.                                 |
    ||         -------------------------------------------------
*******************************************************
*  Perform FAULT ANNUNCIATOR functional test close-up*
*  as described in 32-61-00, Adjustment/Test,         *
*  paragraph 6. D.                                    *
*******************************************************
    ||
    ||
*******************************************************
*  End of trouble shooting of faults detected in      *
*  FAULT ANNUNCIATOR G81 circuit.                     *
*******************************************************
```

```
*************************************
* LH (SHOCK ABSORB) LIGHT IS OFF WITH*
* GEAR DOWNLOCKED AND SHOCK ABSORBERS*
* COMPRESSED.                       *
*************************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	-
ACCESS PLATFORM 3.220m (10ft. 7in.)	-

```
*****************************************************
* On Flight Engineer's panel 12-214, place and hold *
* LIGHTS switch in TEST position.                   *
* On FAULT ANNUNCIATOR, LH (SHOCK ABSORB) light is  *
* on.  IF                                           *
*****************************************************
  ||    |
  YES   NO-------| Replace FAULT ANNUNCIATOR G81 [27].
  ||    |
  *****************************************************
  * In zone 123, open access door 123AB.              *
  * On shelf 2-123, check that there is 28V DC between*
  * test connector UT 1837 terminals 2C (+) and 2D    *
  * (ground).  IF                                     *
  *****************************************************
  ||    |
  NO    YES------| Replace LH gear weight relay G306 [46].
  ||
  ||
  -------------  | Refer to trouble shooting chart 145 : Relay G305
                 | and G306 control circuit faulty.
```

Chart 131 (Sheet 1 of 1)

```
****************************************
*  LIGHT TEST FAULTY : ON FAULT ANNUN- *
*  CIATOR ALL LIGHTS EXCEPT LH (SHOCK  *
*  ABSORBER) REMAIN OFF.               *
****************************************

******************************************************
*  On circuit breaker panel 3-213 (map ref. B8), trip*
*  LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP circuit    *
*  breaker G293.                                     *
*  On Flight Engineer's panel 12-214, place and hold *
*  LIGHTS switch in TEST position.                   *
*  On FAULT ANNUNCIATOR, LH (SHOCK ABSORB) light     *
*  comes on.  IF                                     *
******************************************************
      ||   |          ---------------------------------------------------
      YES NO-----| Ref. 33-14-00, Trouble Shooting                   |
      ||              ---------------------------------------------------
      ||              ---------------------------------------------------
      ----------- | Replace FAULT ANNUNCIATOR G81 [27].               |
                      ---------------------------------------------------
```

Chart 132 (Sheet 1 of 1)

```
***************************************
* NOSE GEAR LH DOOR NOT-OPEN          *
* INDICATING FAULTY. LH (NOSE DOORS)  *
* LIGHT REMAINS OFF.                  *
***************************************
```

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	-
ACCESS PLATFORM 3.220m (10ft. 7in.)	-

```
*****************************************************
* Perform nose gear RH door not-open indicating     *
* test.                                             *
* RH (NOSE DOORS) light comes on during door closing*
*****************************************************
   ||    |
   NO    YES------| Replace nose gear LH door opening limit switch
   ||    |        | G82 [28].
*****************************************************
* In zone 123, open access door 123AB.              *
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 2C (+) and 2D    *
* (ground).  IF                                     *
*****************************************************
   ||    |
   YES   NO-------| Ref. 32-31-00, Trouble Shooting.
   ||
*****************************************************
* Replace FAULT ANNUNCIATOR control relay G79 [26]. *
* Repeat test at which fault occurred  : LH (NOSE   *
* DOORS) light comes on.  IF                        *
*****************************************************
   ||    |
   NO    YES------| Replaced relay was faulty.
   ||
*****************************************************
* Replace doors closed indicating relay G86 [30].   *
* Repeat test at which fault occurred  : LH (NOSE   *
* DOORS) light comes on.  IF                        *
*****************************************************
   ||    |
   NO    YES------| Replaced relay was faulty.
   ||
   --------------| Replace FAULT ANNUNCIATOR G81 [27].
```

Chart 133 (Sheet 1 of 1)

LH BOGIE BEAM NOT ALIGNED INDICATING FAULTY. LH (BOGIE BEAM) LIGHT REMAINS OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	-
CIRCUIT BREAKER SAFETY CLIPS	-

On Flight Engineer's panel 12-214, place LIGHTS switch in HI position.
Repeat test at which fault occurred.
LH (BOGIE BEAM) light comes on.

- YES: Replace FAULT ANNUNCIATOR G81 [27].
- NO: Disconnect LH gear bogie beam aligned microswitch G18 [06] plug and check for continuity between microswitch terminals A and B with bogie beam misaligned. Continuity
  - NO: Replace LH gear bogie beam aligned microswitch G18 [27].
  - YES: In diode assembly R280, replace diode G392 [55].

Chart 134 (Sheet 1 of 1)

NOSE GEAR SHOCK ABSORBER COMPRESSED INDICATING FAULTY. RH-NOSE (SHOCK ABSORB) LIGHT REMAINS OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	-
ACCESS PLATFORM 3.220m (10ft. 7in.)	-

In zone 123, open access door 123 AB.
On shelf 3-123, check that there is 28V DC between test connector UT 1838 terminals 12A (+) and 12B (ground). IF

- YES — Replace nose gear weight relay G298 [45].
- NO — Refer to trouble shooting chart 141 : relay G297 and G298 control circuit faulty.

Chart 135 (Sheet 1 of 1)

RH MAIN GEAR SHOCK ABSORBER NOT-EXTENDED INDICATING FAULTY. RH-NOSE (SHOCK ABSORB) LIGHT REMAINS OFF.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART No.
MULTIMETER	-
ACCESS PLATFORM 3.220m (10ft. 7in.)	-

In zone 123, open access door 123AB.
On shelf 3-123, check that there is 28V DC between test connector UT 1838 terminals 13A (+) and 13B (ground). IF

- NO: Refer to trouble shooting chart 105 : relay G315 and G316 control circuit faulty.
- YES: Replace RH gear weight microswitch G316 [47].

Chart 136 (Sheet 1 of 1)

```
**************************************
* LH MAIN GEAR SHOCK ABSORBER NOT    *
* EXTENDED INDICATING FAULTY. LH     *
* (SHOCK ABSORB) LIGHT REMAINS OFF.  *
**************************************

***************************************************
* On Flight Engineer's panel 12-214, place LIGHTS   *
* switch in HI position.                            *
* Repeat test at which fault occurred.              *
* LH (SHOCK ABSORB) light comes on.                 *
***************************************************
  ||   |        ---------------------------------------------------
  YES  NO-------| Refer to trouble shooting chart 131 : LH (SHOCK |
  ||            | ABSORB) light is off with gear downlocked and   |
  ||            | shock absorbers compressed.                     |
  ||            ---------------------------------------------------
  ||            ---------------------------------------------------
  --------------| Replace FAULT ANNUNCIATOR G81 [27].             |
                ---------------------------------------------------
```

Chart 137 (Sheet 1 of 1)

7. Trouble Shooting of Faults Concerning the Landing Gear Weight Relays.

```
*****************************************************
* In zone 123, open access door 123AB.              *
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminal 12A (+) and 12B   *
* (ground). IF                                      *
*****************************************************
    ||  |       -----------------------------------------------
    OK  NOT OK---| Relay G297 and G298 control circuit faulty  |
    ||           | Ref. Chart 141.                             |
    ||          -----------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 4A (+) and 4B    *
* (ground). IF                                      *
*****************************************************
    ||  |       -----------------------------------------------
    OK  NOT OK---| Relay G299 control circuit faulty.          |
    ||           | Ref. Chart 142.                             |
    ||          -----------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 3A (+) and 3D    *
* (ground). IF                                      *
*****************************************************
    ||  |       -----------------------------------------------
    OK  NOT OK---| Relay G300 and G301 control circuit faulty  |
    ||           | Ref. Chart 143.                             |
    ||          -----------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 3A (+) and 3B    *
* (ground). IF                                      *
*****************************************************
    ||  |       -----------------------------------------------
    OK  NOT OK---| Relay G302, G303 and G304 control circuit faulty|
    ||           | Ref. Chart 144.                             |
    ||          -----------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 2C (+) and 2D    *
* (ground). IF                                      *
*****************************************************
    ||  |       -----------------------------------------------
    OK  NOT OK---| Relay G305 and G306 control circuit faulty  |
    ||           | Ref. Chart 145.                             |
    ||          -----------------------------------------------
```

```
    ||
    OK
    ||
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 2C (+) and 2B    *
* (ground). IF                                      *
*****************************************************
    ||   |           ------------------------------------------------------
    OK   NOT OK---| Relay G307, G308 and G309 control circuit faulty|
    ||              | Ref. Chart 146.                                      |
    ||           ------------------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 7A (+) and 7B    *
* (ground). IF                                      *
*****************************************************
    ||   |           ------------------------------------------------------
    ||   |          | Relay G326, G327, G328 and G329 control circuit |
    OK   NOT OK---| faulty.                                            |
    ||              | Ref. Chart 147.                                    |
    ||           ------------------------------------------------------
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 11A (+) and 11B  *
* (ground). IF                                      *
*****************************************************
    ||   |           ------------------------------------------------------
    OK   NOT OK---| Relay G310 and G311 control circuit faulty.     |
    ||              | Ref. Chart 148.                                    |
    ||           ------------------------------------------------------
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 11A (+) and 11D  *
* (ground). IF                                      *
*****************************************************
    ||   |           ------------------------------------------------------
    OK   NOT OK---| Relay G312, G313 and G314 control circuit faulty|
    ||              | Ref. Chart 149.                                    |
    ||           ------------------------------------------------------
*****************************************************
* On shelf 3-213, check that there is 28VDC between *
* test connector UT 1838 terminals 13A (+) and 13B  *
* (ground). IF                                      *
*****************************************************
    ||   |           ------------------------------------------------------
    OK   NOT OK---| Relay G315 and G316 control circuit faulty      |
    ||              | Ref. Chart 150.                                    |
    ||           ------------------------------------------------------
```

```
    ||
    OK
    ||
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 13A (+) and 13D  *
* (ground). IF                                      *
*****************************************************
    ||   |        ---------------------------------------------------
    OK   NOT OK---| Relay G317, G318 and G319 control circuit faulty|
    ||            | Ref. Chart 151.                                 |
    ||            ---------------------------------------------------
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 10C (+) and 10D  *
* (ground). IF                                      *
*****************************************************
    ||   |        ---------------------------------------------------
    ||   |        | Relay G330, G371, G372 and G373 control circuit |
    OK   NOT OK---| faulty.                                         |
    ||            | Ref. Chart 152.                                 |
    ||            ---------------------------------------------------
*****************************************************
* End of trouble shooting of faults concerned with  *
* landing gear weight relays.                       *
* Close access door 123AB                           *
*****************************************************
```

RELAY G297 AND G298 CONTROL CIRCUIT FAULTY.

GROUND EQUIPMENT REQUIRED	
DESCRIPTION	PART NO.
MULTIMETER	________

On shelf 3-123, check for continuity between test connector UT 1838 terminal 12B and ground.
Continuity

- YES: Replace NOSE UC WEIGHT SW "A" SYS SUP G291 circuit breaker [39].
- NO: Replace nose landing gear weight microswitch G320 [48].

Chart 141 (Sheet 1 of 1)

```
***************************************=============================
* RELAY G299 CONTROL CIRCUIT FAULTY. *| GROUND EQUIPMENT REQUIRED  |
***************************************|----------------------------|
                                       | DESCRIPTION       PART NO. |
                                       |----------------------------|
                                       | MULTIMETER        ________ |
                                       ------------------------------

*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminal 4A and ground. IF *
*****************************************************
    ||     |    -------------------------------------------------
    YES    NO-----| Replace NOSE U/C W/SW "B" SUP circuit breaker |
    ||            | G296 [44].                                    |
    ||          -------------------------------------------------
*****************************************************
* On shelf 2-123, check for continuity between test *
* connector UT 1837 terminal 12B and ground.        *
* Continuity                                        *
*****************************************************
    ||     |    -------------------------------------------------
    YES    NO-----| Replace nose gear weight microswitch G321 [49]. |
    ||          -------------------------------------------------
    ||          -------------------------------------------------
    -------------| Replace diode G374 [54].                       |
                -------------------------------------------------
```

Chart 142 (Sheet 1 of 1)

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```
*************************************----------------------------
* RELAY G300 AND G301 CONTROL CIRCUIT*| GROUND EQUIPMENT REQUIRED |
* FAULTY.                            *|---------------------------|
*************************************| DESCRIPTION      PART NO. |
                                      |---------------------------|
                                      | MULTIMETER      ________  |
                                      ----------------------------


*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminal 3A and ground. IF *
*****************************************************
    ||     |      ----------------------------------------------------
    YES    NO-----| Replace LH UC WEIGHT SW "A" SYS SUP circuit      |
    ||            | breaker G292 [40].                               |
    ||            ----------------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 3A (+) and 3B    *
* (ground). IF                                      *
*****************************************************
    ||     |      ----------------------------------------------------
    YES    NO-----| Replace LH shortening lock microswitch G63 [23].|
    ||            ----------------------------------------------------
    ||            ----------------------------------------------------
    --------------| Replace LH gear weight microswitch G322 [50].    |
                  ----------------------------------------------------
```

Chart 143 (Sheet 1 of 1)

```
*************************************-----------------------------
* RELAY G302, G303 AND G304 CONTROL  *| GROUND EQUIPMENT REQUIRED  |
* CIRCUIT FAULTY                     *|----------------------------|
**************************************| DESCRIPTION       PART NO. |
                                      |----------------------------|
                                      | MULTIMETER        ________ |
                                      -----------------------------

*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminal 3A and ground. IF *
*****************************************************
    ||    |      --------------------------------------------------
    YES   NO-----| Replace LH UC WEIGHT "A" SYS SUP circuit       |
    ||           | breaker G292 [40].                             |
    ||           --------------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 3A (+) and 3D    *
* (ground). IF                                      *
*****************************************************
    ||    |      --------------------------------------------------
    YES   NO-----| Replace LH shortening lock microswitch G63 [23] |
    ||           --------------------------------------------------
    ||           --------------------------------------------------
    -------------| Replace LH gear weight microswitch G322 [50].   |
                 --------------------------------------------------
```

Chart 144 (Sheet 1 of 1)

```
**************************************-------------------------------
* RELAY G305 and G306 CONTROL CIRCUIT*| GROUND EQUIPMENT REQUIRED   |
* FAULTY                             *|-----------------------------|
**************************************| DESCRIPTION       PART NO.  |
                                      |-----------------------------|
                                      | MULTIMETER        ________  |
                                      -------------------------------

*************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminal 2C and ground. IF *
*************************************************
    ||    |      ---------------------------------------------
    YES   NO-----| Replace LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP |
    ||           | circuit breaker G293 [41].                     |
    ||           ---------------------------------------------
*************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 2C (+) and 2B    *
* (ground). IF                                      *
*************************************************
    ||    |      ---------------------------------------------
    YES   NO-----| Replace LH shortening lock microswitch G63 [23].|
    ||           ---------------------------------------------
    ||           ---------------------------------------------
    -------------| Replace LH gear weight microswitch G323 [51].   |
                 =============================================
```

Chart 145 (Sheet 1 of 1)

```
***************************************-------------------------------
* RELAY G307, G308 AND G309 CONTROL   *| GROUND EQUIPMENT REQUIRED   |
* CIRCUIT FAULTY                      *|-----------------------------|
***************************************| DESCRIPTION       PART NO.  |
                                       |-----------------------------|
                                       | MULTIMETER        ________  |
                                       -------------------------------

*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminal 2C and ground. IF *
*****************************************************
    ||     |     ---------------------------------------------------
    YES    NO-----| Replace LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP |
    ||            | circuit breaker G293 [41].                     |
    ||            ---------------------------------------------------
*****************************************************
* On shelf 2-123, check that there is 28VDC between *
* test connector UT 1837 terminals 2C (+) and 2D    *
* (ground). IF                                      *
*****************************************************
    ||     |     ---------------------------------------------------
    YES    NO-----| Replace LH shortening lock microswitch G63 [23].|
    ||            ---------------------------------------------------
    ||            ---------------------------------------------------
    -------------| Replace LH gear weight microswitch G323 [51].   |
                  ---------------------------------------------------
```

Chart 146 (Sheet 1 of 1)

```
*************************************-------------------------------
* RELAY G326, G327, G328 AND G329    *| GROUND EQUIPMENT REQUIRED  |
* CONTROL CIRCUIT FAULTY.            *|----------------------------|
**************************************| DESCRIPTION       PART NO. |
                                      |----------------------------|
                                      | MULTIMETER        ________ |
                                      ------------------------------

*****************************************************
* On shelf 2-123, check for continuity between test *
* connector UT 1837 terminal 7B and ground.         *
* Continuity                                        *
*****************************************************
    ||    |      ----------------------------------------------------
    YES   NO-----| Replace LH gear downlocked microswitch G54 [14].|
    ||           ----------------------------------------------------
    ||           ----------------------------------------------------
    -------------| Replace LH UC WEIGHT SW & DOWNLOCK "B" SYS SUP   |
                 | circuit breaker G293 [41].                      |
                 ----------------------------------------------------
```

Chart 147 (Sheet 1 of 1)

```
*************************************-------------------------------
* RELAY G310 AND G311 CONTROL CIRCUIT*| GROUND EQUIPMENT REQUIRED  |
* FAULTY.                           *|-----------------------------|
*************************************| DESCRIPTION        PART NO. |
                                     |-----------------------------|
                                     | MULTIMETER        _________ |
                                     -------------------------------

*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminal 11A and ground. IF*
*****************************************************
    ||     |       -----------------------------------------------
    YES    NO-----| Replace RH UC WEIGHT SW 'B' SYS SUP circuit   |
    ||            | breaker G294 [42].                            |
    ||             -----------------------------------------------
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 11A (+) and 11D  *
* (ground). IF                                      *
*****************************************************
    ||     |       -----------------------------------------------
    YES    NO-----| Replace RH shortening lock microswitch G64 [24].|
    ||             -----------------------------------------------
    ||             -----------------------------------------------
    -------------| Replace RH gear weight microswitch G324 [52].  |
                   -----------------------------------------------
```

Chart 148 (Sheet 1 of 1)

```
*************************************-------------------------------
* RELAY G312, G313 AND G314 CONTROL  *| GROUND EQUIPMENT REQUIRED   |
* CIRCUIT FAULTY.                    *|-----------------------------|
**************************************| DESCRIPTION       PART NO.  |
                                      |-----------------------------|
                                      | MULTIMETER        ________  |
                                      -------------------------------

*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminal 11A and ground. IF*
*****************************************************
    ||     |      -----------------------------------------------------
    YES    NO-----| Replace RH UC WEIGHT SW 'B' SYS SUP circuit       |
    ||            | breaker G294 [42].                                |
    ||            -----------------------------------------------------
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 11A (+) and 11B  *
* (ground). IF                                      *
*****************************************************
    ||     |      -----------------------------------------------------
    YES    NO-----| Replace RH shortening lock G64 [24].              |
    ||            -----------------------------------------------------
    ||            -----------------------------------------------------
    --------------| Replace RH gear weight microswitch G324 [52].     |
                  -----------------------------------------------------
```

Chart 149 (Sheet 1 of 1)

```
**************************************-------------------------------
* RELAY G315 AND G316 CONTROL CIRCUIT*| GROUND EQUIPMENT REQUIRED   |
* FAULTY.                            *|-----------------------------|
**************************************| DESCRIPTION       PART NO.  |
                                      |-----------------------------|
                                      | MULTIMETER       _________  |
                                      -------------------------------

*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminal 13A and ground. IF*
*****************************************************
    ||     |      ---------------------------------------------
    YES    NO-----| Replace RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP |
    ||            | circuit breaker G295 [43].                     |
    ||            ---------------------------------------------
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 13A (+) and 13D  *
* (ground). IF                                      *
*****************************************************
    ||     |      ---------------------------------------------
    YES    NO-----| Replace RH shortening lock microswitch G64 [24].|
    ||            ---------------------------------------------
    ||            ---------------------------------------------
    --------------| Replace RH gear weight microswitch G325 [53].  |
                  ---------------------------------------------
```

Chart 150 (Sheet 1 of 1)

```
**************************************-------------------------------
* RELAY G317, G318 AND G319 CONTROL  *| GROUND EQUIPMENT REQUIRED   |
* CIRCUIT FAULTY.                    *|-----------------------------|
**************************************| DESCRIPTION       PART NO.  |
                                      |-----------------------------|
                                      | MULTIMETER        _______   |
                                      -------------------------------

*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminal 13A and ground. IF*
*****************************************************
    ||    |      ----------------------------------------------
    YES   NO-----| Replace RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP |
    ||           | circuit breaker G295 [43].                     |
    ||           ----------------------------------------------
*****************************************************
* On shelf 3-123, check that there is 28VDC between *
* test connector UT 1838 terminals 13A (+) and 13B  *
* (ground). IF                                      *
*****************************************************
    ||    |      ----------------------------------------------
    YES   NO-----| Replace RH shortening lock microswitch G64 [24].|
    ||           ----------------------------------------------
    ||           ----------------------------------------------
    -------------| Replace RH gear weight microswitch G325 [53].   |
                 ----------------------------------------------
```

Chart 151 (Sheet 1 of 1)

```
*************************************-------------------------------
* RELAY G330, G371, G372 AND G373    *| GROUND EQUIPMENT REQUIRED     |
* CONTROL CIRCUIT FAULTY.            *|-------------------------------|
**************************************| DESCRIPTION        PART NO.   |
                                      |-------------------------------|
                                      | MULTIMETER         _________  |
                                      -------------------------------

*****************************************************
* On shelf 3-123, check for continuity between test *
* connector UT 1838 terminal 10D and ground.        *
* Continuity                                        *
*****************************************************
    ||     |     ----------------------------------------------------
    YES    NO=====| Replace RH gear downlocked microswitch G53 [13].|
    ||            ----------------------------------------------------
    ||            ----------------------------------------------------
    -------------| Replace RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP   |
                  | circuit breaker G295 [43].                       |
                  ----------------------------------------------------
```

Chart 152 (Sheet 1 of 1)

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[1] Landing gear Normal control switch		10-211	G5	First Officer's instrument panel	32-31-91 R/I	32-61-01
[2] LH gear uplocked microswitch	731	571	G12	On LH main gear uplock	32-31-15 R/I	32-61-01
[3] RH gear uplocked microswitch	741	671	G13	On RH main gear uplock	32-31-15 R/I	32-61-01
[4] Nosewheel centred micro-switch		715	G14	On steer-ing jack	32-31-94 R/I	32-61-01
[5] Nose gear uplocked micro-switch	711	127	G17	On nose gear uplock	32-31-67 R/I	32-61-01
[6] LH gear bogie beam ali-gned micro-switch		733	G18	On LH main gear pitch damper	32-31-92 R/I	32-61-01
[7] LH gear door opening limit switch		731	1G20-2	On LH main gear door	32-31-14 R/I	32-61-01
[8] RH gear door opening switch		741	2G20-2	On RH main gear door	32-31-14 R/I	32-61-01
[9] RH gear bogie beam ali-gned micro-switch		743	G21	On RH main gear pitch damper	32-31-92 R/I	32-61-01
[10] Nose gear downlocked microswitch		715	G22	On nose gear te-lescopic drag strut	32-31-71 R/I	32-61-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[11] Circuit breaker 28VDC		1-213	G51	Map Ref. N16	24-50-00 R/I	32-61-01
[12] Gears position indicating unit		2-212	G52	First Officer's instrument panel	32-61-11 R/I	32-61-01
[13] RH gear downlocked microswitch		743	G53	On RH main gear telescopic brace strut	32-31-28 R/I	32-61-01 32-61-06
[14] LH gear downlocked microswitch		733	G54	On LH main gear telescopic brace strut	32-31-28 R/I	32-61-01 32-61-06
[15] Tail gear downlocked microswitch		752	G55	On tail gear actuating cylinder	32-31-82 R/I	32-61-01
[16] Tail gear uplocked microswitch		752	G56	On tail gear actuating cylinder	32-31-82 R/I	32-61-01
[17] LH main gear door uplocked microswitch	731	571	G57	On LH main gear door uplock	32-31-12 R/I	32-61-01
[18] RH main gear door uplocked microswitch	741	671	G58	On RH main gear door uplock	32-31-12 R/I	32-61-01
[19] Nose gear LH door uplocked microswitch	711	127	G59	On nose gear LH door fwd uplock	32-31-62 R/I	32-61-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[20] Nose gear RH door uplock-ed microswitch	712	128	G60	On nose gear RH door fwd uplock	32-31-62 R/I	32-61-01
[21] Nose gear LH door uplock-ed microswitch	711	127	G61	On nose gear LH door aft uplock	32-31-62 R/I	32-61-01
[22] Nose gear RH door uplock-ed microswitch	712	128	G62	On nose gear RH door aft uplock	32-31-62 R/I	32-61-01
[23] LH shorte-ning lock mi-croswitch	732AB	733	G63	On LH gear shortening lock	32-31-27 R/I	32-61-01 32-61-06
[24] RH shorte-ning lock mi-croswitch	742AB	743	G64	On RH gear shortening lock	32-31-27 R/I	32-61-01 32-61-06
[25] Upper locks transfer relay	123AB	3-123	G77	Fwd under-floor rack	32-00-00 R/I	32-61-01
R ** on A/C 001-006 [26] Fault annunciator control relay	123AB	1-123	G79	Fwd under-floor rack	32-00-00	32-61-01
R ** on A/C 001-006 [27] FAULT ANNUNCIATOR		8-214	G81	Flight Engineer's panel	32-61-14 R/I	32-61-01
[28] Nose gear LH door opening limit switch	711	127	G82	Nose gear bay	32-31-95 R/I	32-61-01
[29] Nose gear RH door opening limit switch	712	128	G83	Nose gear bay	32-31-95 R/I	32-61-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	MANUAL REF. WIRING DIAGRAM
[30] Landing gear doors closed indicating relay	123 AB	2-123	G86	Under-floor rack	32-00-00 R/I	32-61-01
[31] GRND TEST-L/G HORN push-button		9-211	G164	Centre console		32-61-01
[32] Circuit breaker 28VDC		3-213	G241	Map Ref. C8	24-50-00 R/I	32-61-02
[33] Nose gear visual indicator pushbutton	221 YF	125	G242	Under passenger compartment floor		32-61-02
[34] LH gear visual indicator pushbutton	233 BF	163	G243	Under passenger compartment floor		32-61-02
[35] RH gear visual indicator pushbutton	233 BF	164	G244	Under passenger compartment floor		32-61-02
[36] Nose gear visual indicator		715	G245	On nose gear telescopic drag strut	32-61-13 R/I	32-61-02
[37] LH gear visual indicator		733	G246	On LH gear telescopic brace strut	32-61-12 R/I	32-61-02
[38] RH gear visual indicator		743	G247	On RH gear telescopic brace strut	32-61-12 R/I	32-61-02
[39] Circuit breaker 28VDC		1-213	G291	Map Ref. M16	24-50-00 R/I	32-61-06

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[40] Circuit breaker 28VDC		1-213	G292	Map Ref. M17	24-50-00 R/I	32-61-06
[41] Circuit breaker 28VDC		3-213	G293	Map Ref. B8	24-50-00 R/I	32-61-06
[42] Circuit breaker 28VDC		3-213	G294	Map Ref. B9	24-50-00 R/I	32-61-06
[43] Circuit breaker 28VDC		1-213	G295	Map Ref. M18	24-50-00 R/I	32-61-06
[44] Circuit breaker 28VDC		3-213	G296	Map Ref. D8	24-50-00 R/I	32-61-06
[45] Nose gear weight relay	123 AB	3-123	G298	Fwd under-floor rack	32-00-00 R/I	32-61-01
[46] LH gear weight relay	123 AB	2-123	G306	Fwd under-floor rack	32-00-00 R/I	32-61-01
[47] RH gear weight relay	123 AB	3-123	G316	Fwd under-floor rack	32-00-00 R/I	32-61-01
[48] Nose gear weight micro-switch		715	G320	On nose gear tor-que link	32-31-96 R/I	32-61-06
[49] Nose gear weight micro-switch		715	G321	On nose gear tor-que link	32-31-96 R/I	32-61-06
[50] LH gear weight micro-switch		733	G322	On LH gear leg	32-31-93 R/I	32-61-06
[51] LH gear weight micro-switch		733	G323	On LH gear leg	32-31-93 R/I	32-61-06
[52] RH gear weight micro-switch		743	G324	On RH gear leg	32-31-93 R/I	32-61-06

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[53] RH gear weight micro-switch		743	G325	On RH gear leg	32-31-93 R/I	32-61-06
[54] Diode	123 AB	2-123	G375	Fwd under-floor rack		32-61-06
[55] Diode	216 ES	3-216	G392	Diode assy R280		32-61-01
[56] Air data computer 1	215 BS	6-215	1F71	LH elec-tronics rack	34-00-00 R/I	32-61-01
[57] Air data computer 2	216 BS	6-216	2F71	RH elec-tronics rack	34-00-00 R/I	32-61-01
[58] ADC con-trol relay	215 BS	6-215	1F93	LH elec-tronics rack		32-61-01
[59] ADC con-trol relay	216 BS	6-216	2F93	RH elec-tronics rack		32-61-01
[60] Forward thrust micro-switch box (Eng. 1)	211 CS	9-211	1K1548	Centre console	76-15-12 R/I	32-61-01
[61] Forward thrust micro-switch box (Eng. 2)	211 CS	9-211	2K1548	Centre console	76-15-12 R/I	32-61-01
[62] Forward thrust micro-switch box (Eng. 3)	212 CS	9-211	3K1548	Centre console	76-15-12 R/I	32-61-01

ITEM No. AND DESCRIPTION	ACCESS PANEL	PANEL/ ZONE	EQUIP. IDENT.	POSITION	MANUAL REF. MAINT. TOPIC	WIRING DIAGRAM
[63] Forward thrust micro-switch box (Eng. 4)	212 CS	9-211	4K1548	Centre console	76-15-12 R/I	32-61-01
[64] Droop nose position trans-mitter unit	113DB/ 121DB	121	M58	LH equip-ment bays F1/F8	27-61-51 R/I	32-61-01
[65] Audio warning unit	216 DS	7-216	W381	RH elec-tronics rack	31-23-11 R/I	32-61-01

Component Identification
Table 101

LANDING GEAR AND DOORS INDICATING - ADJUSTMENT/TEST

WARNING : MAKE CERTAIN THAT THE POSITIONS OF NOSE AND MAIN GEAR DOORS CORRESPOND WITH THE ACTUAL POSITIONS OF THE RESPECTIVE OPERATING HANDLES.
HANDLE LOCKED, INDICATOR PLATE SHOWING WHITE : DOORS CLOSED.
HANDLE LOCKED, INDICATOR PLATE SHOWING RED : DOORS OPEN.

MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The aim of the tests described in this topic is to make certain that the following operate correctly :

A. Gears position indicating unit (G52)

B. Aural warning.

C. Main gear brace strut and nose gear drag strut downlock visual indicators.

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D. FAULT ANNUNCIATOR (G81).

2. Operational Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Make certain that the following circuit breakers are set.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
AUDIO WARN SYS SUP 1	1-213	W 371	M21
UC POSN IND		G 51	N16
ADC1 28V SUP		1F 74	P12
ADC1 26V SUP	2-213	1F 78	A 2
1ST PLT ADC INST SUP		1F 75	B 3
ADC1 115V SUP		1F 73	F 3
LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
UC DOWNLOCK VISUAL IND		G 241	C 8
AUDIO WARN SYS SUP 2	5-213	W 372	C17
ADC2 28V SUP	5-213	2F 74	F12
2ND PLT ADC INST SUP	13-216	2F 75	A14
ADC2 26V SUP		2F 78	F14
ADC2 115V SUP		2F 73	F15
UC SELECTOR LOWER CONT	15-215	G 4	A 9
PLTS LT TEST SUP		L1001	E14
3 CM STN LH LT TEST SUP 2	15-216	L1004	C13

(3) Remove safety clips and tags and reset the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FLT CONT & NAV BUS 14XS	3-213	X 355	H 2
NAV INST BUS 13XS	13-216	X 345	G 4

(4) On Captain and First Officer airspeed indicators (located respectively on Captain's and First Officer's

instrument panels) place mode selector knob in N (Normal) position.

(5) On centre console, make certain that :

(a) The throttle control levers are in idle position.

(b) On ADC control panel, ADC1 and ADC2 ON-OFF switches are in OFF position and that the TEST selectors are in NORM position.

(c) Landing gear and door Emergency control lever is in NEUTRAL position.

(6) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(7) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

C. Test of Gears Position Indicating Unit (G52)

(1) On First Officer's instrument panel, green LH, NOSE, T and RH arrows on gears position indicating unit are on.

(2) On First Officer's side console :

(a) Press and hold D/B LIGHT switch in TEST position.

On First Officer's instrument panel, on gears position indicating unit, amber UPPER LOCKS, LH SHORT, RH SHORT lights and the four red lights come on.

(b) Release D/B LIGHT switch.

On First Officer's instrument panel, on gears position indicating unit, amber UPPER LOCKS, LH SHORT, RH SHORT lights as well as the four red lights go off.

(c) Press D/B LIGHT switch in LO position.

On First Officer's instrument panel, on gears position indicating unit, green LH, NOSE, T and RH arrows dim.

(d) Press D/B LIGHT switch in HI position.

On First Officer's instrument panel, on gears position indicating unit, green LH, NOSE, T and RH arrows recover normal brightness.

D. Aural Warning Test

(1) On centre console :

RB (a) On ADC control panel, place ADC1 ON-OFF switch in ON position. If amber ADC1 warning light comes on, press then release same; warning light goes off.

(b) Press GRND TEST - L/G HORN pushbutton and hold in this position until test is completed.
- Aural warning (horn) sounds.

(c) On ADC control panel :

(c1) Place ADC1 TEST selector in 1 position and monitor airspeed indicator on Captain's instrument panel.
- Check that aural warning stops sounding when value read on airspeed indicator exceeds 180 knots.

NOTE: Ignore visual and aural warnings not specifically mentioned in this test.

(c2) Place ADC1 TEST selector in NORM position.
- Aural warning (horn) sounds.

(c3) Place ADC1 ON-OFF switch in OFF position.
- Aural warning stops sounding.

(c4) Place ADC2 ON-OFF switch in ON position.
- Aural warning (horn) sounds.

(c5) Place ADC2 TEST selector in 1 position and monitor airspeed indicator on First Officer's instrument panel.
- Check that aural warning stops sounding when value read on airspeed indicator exceeds 180 knots.

(c6) Place ADC2 TEST selector in NORM position.
- Aural warning (horn) sounds.

(d) Release GRND TEST - L/G HORN pushbutton.
- Aural warning stops sounding.

WARNING : MAKE CERTAIN THAT GREEN HYDRAULIC SYSTEM IS DEPRESSURIZED.

(2) On First Officer's instrument panel, place landing gear Normal control lever in UP position.
- Aural warning (horn) sounds.

(3) Place two throttle control levers at a time in MAX THRUST position then back to idle position as per table below :

THROTTLE CONTROL LEVERS					
MAX. THRUST			IDLE		
1	-	2	3	-	4
1	-	3	2	-	4
1	-	4	2	-	3
2	-	3	1	-	4
2	-	4	1	-	3
3	-	4	1	-	2

Aural warning continues to sound during all six possible combinations.

(4) Place three throttle control levers in MAX. THRUST position.

Aural warning stops sounding.

(5) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Place throttle control levers in idle position.

(7) Make certain that droop nose is not in DOWN position (Ref. 27-62-00, Servicing).

(8) On centre console, on ADC control panel, place ADC2 ON-OFF switch in ON position (GRND TEST - L/G HORN pushbutton still pressed).
- Aural warning (horn) sounds.

(9) On overhead panel, momentarily press Captain's AUDIO CANCEL pushbutton.
- Aural warning stops sounding.

(10) Place ADC2 ON-OFF switch in OFF then ON position.
- Aural warning (horn) sounds.

(11) On overhead panel, momentarily press First Officer's AUDIO CANCEL pushbutton.
- Aural warning stops sounding.

(12) Place droop nose in DOWN position (Ref. 27-62-00, Servicing)
- Aural warning (horn) sounds.

(13) On overhead panel, momentarily press Captain's then First Officer's AUDIO CANCEL pushbutton
- Aural warning continues to sound.

(14) Release GRND TEST - L/G HORN pushbuttoon
- Aural warning stops sounding.

(15) Place ADC2 ON-OFF switch in OFF position.

E. Main Gear Brace Strut and Nose Gear Drag Strut Downlock Visual Indicator Test

(1) Open access door 221YF.

(2) Press pushutton G242.
Make certain that a red luminous point and white luminous beam appear on nose gear drag strut visual indicator.

(3) Close access door 221YF.

(4) Open access door 233BF.

(5) Press successively pushbuttons G243 and G244.
Make certain that a red luminous point and a white luminous beam appear on the visual indicator of each main landing gear brace strut.

(6) Close access door 233BF.

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F. Test of FAULT ANNUNCIATOR (G81)

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.
On Flight Engineer's panel, on FAULT ANNUNCIATOR LH (SHOCK ABSORB) light is on.

(2) On Flight Engineer's panel 12-214.

(a) Press and hold LIGHTS/TEST selector switch in TEST position.

On Flight Engineer's panel, on FAULT ANNUNCIATOR, the following lights come on.

- LH, RH (NOSE DOORS)
- LH, RH (MAIN DOORS)
- LH, RH (BOGIE BEAM)
- RH-NOSE (SHOCK ABSORB)
- NOSE (WHEEL ALIGN)

(b) Release LIGHTS/TEST selector switch

On Flight Engineer's panel, on FAULT ANNUNCIATOR, the following lights go off.

- LH, RH (NOSE DOORS)
- LH, RH (MAIN DOORS)
- LH, RH (BOGIE BEAM)
- RH-NOSE (SHOCK ABSORB)
- NOSE (WHEEL ALIGN)

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FLT CONT & NAV BUS 14XS	2-213	X 355	H 2
NAV INST BUS 13XS	13-216	X 345	G 4

3. Functional Test of Gears Position Indicating Unit (G52)

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183 621 lbf.)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Jacking Pad - Nose	D925370000
Safety Stay	
Electrical Ground Power Unit	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Jack up aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Position safety barriers.

(7) Make certain that visor is not uplocked.

(8) Connect electrical ground power unit and energize the aircraft electrical network (24-41-00, Servicing).

(9) Make certain that the following circuit breakers are set.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW 'A' SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW 'A' SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW 'B' SYS SUP		G 294	B 9
NOSE U/C W/SW 'B' SUP		G 296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
PLTS LT TEST SUP		L1001	E14

(10) Remove landing gear and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

C. Landing Gear Retraction Indicating Test

(1) On First Officer's instrument panel, on gears position indicating unit, green LH, NOSE, T and RH arrows are on.

(2) On First Officer's side console, press D/B LIGHT selector switch in TEST position, and release.

On gears position indicating unit, all the lights come on during test operation.

WARNING : MAKE CERTAIN THAT THE LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(a) On First Officer's instrument panel, on gears position indicating unit, lights must operate as follows :

(a1) Red lights corresponding to the green LH, NOSE and RH arrows come on (doors unlocked in closed position).

(a2) Green LH, NOSE, T, RH arrows go off.
Red light corresponding to green T arrow comes on (beginning of gear retraction).
Amber UPPER LOCKS light comes on.

(a3) Red light corresponding to green T arrow goes off (tail landing gear uplocked).
Amber UPPER LOCKS light goes off (gears uplocked).

(a4) Red lights corresponding to green LH, NOSE and RH arrows go off (doors locked, closed).

NOTE : Red lights corresponding to green LH and RH arrows must operate at the same time.
The light intensity of all gears position indicating unit lights is normal during the test.

(b) On gears position indicating unit, all lights are off.

(4) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

D. Landing Gear Extension Indicating Test

(1) On First Officer's side console, place D/B LIGHT selector switch in LO position.

WARNING : MAKE CERTAIN THAT THE LANDING GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(2) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

On gears position indicating unit lights operate as follows :

(a) Amber LH SHORT, UPPER LOCKS, RH SHORT, lights come on.

(b) Red lights corresponding to green LH, NOSE, RH arrows come on (doors opening).

(c) Red light corresponding to green T arrow comes on (tail landing gear unlocking).
Amber UPPER LOCKS light goes off (landing gears unlocking).

(d) Green NOSE and T arrows come on.
Red light corresponding to green T arrow goes off (nose gear and tail landing gear downlocked).
Green LH and RH arrows come on. Amber LH SHORT and RH SHORT lights go off (main landing gear down-locked, shortening locks locked).

(e) Red lights corresponding to green LH, NOSE, RH, arrows go off (doors locked closed)

NOTE : At the end of the operation, only green LH, NOSE, RH, T arrows are illuminated.
All lights on gears position indicating unit are dimmed during the test.

(3) On First Officer's side console, place D/B LIGHT selector switch in HI position.

(a) The brightness of green LH, NOSE, T and RH arrows on gears position indicating unit is normal.

E. Close-Up

(1) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(2) Shut off hydraulic power supply. (Ref. 29-11-00, Servicing).

(3) De-energize the aircraft electrical network and dis-connect electrical ground power unit (Ref. 24-41-00, Servicing).

(4) Position landing gear and shortening mechanism safety devices.

(5) Make certain that area under the aircraft is clear.

(6) Remove safety stay.

(7) Lower the aircraft onto its wheels.

(8) Remove safety barriers.

4. Aural Warning Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Jack - Lifting Capability Greater Than 81600 daN (183 621 lbf.)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting LH	D924008000
Pyramid Adapter - Lifting RH	D924008001
Jacking Pad - Nose	D925370000
Safety Stay	
Safety Barriers	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On centre console :

(b) On ADC control panel :

(b1) Make certain that ADC1 and ADC2 TEST selectors are in NORM position.

(b2) Place ADC1 and ADC2 switches in ON position.

(c) Make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL posi-

tion.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Position safety barriers.

(7) Make certain that visor is not uplocked.

(8) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(9) Make certain that the following circuit breakers are set.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW 'A' SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW 'A' SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP		G 295	M18
AUDIO WARN SYS SUP 1		W 371	M21
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW 'B' SYS SUP		G 294	B 9
NOSE UC WEIGHT SW 'B' SYS SUP		G 296	D 8
AUDIO WARN SYS SUP 2	5-213	W 372	C17
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(10) Remove safety clips and tags and set the following circuit breakers.

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FLT CONT & NAV BUS 14XS	2-213	X 355	H 2
NAV INST BUS 13XS	13-216	X 345	G 4

C. Aural Warning Test

(1) Remove nose gear safety devices.

(2) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.
MAKE CERTAIN THAT THE MAIN LANDING GEAR SAFETY DEVICES ARE IN POSITION.

(3) On First Officer's instrument panel.

(a) Place landing gear Normal control lever in UP position.

Aural warning sounds.

(b) After nose gear downlock release, place landing gear Normal control lever in DOWN position.

Aural warning stops sounding only when nose gear is downlocked.

(c) Place landing gear Normal control lever in NEUTRAL position.

(d) On gears position indicating unit, make certain that the four green arrows are illuminated (gears downlocked).

(4) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Install nose gear safety devices.

(6) Remove safety devices from RH gear and shortening mechanism.

(7) Pressurize Green hydraulic system (Ref. 29-11-00,

Servicing).

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.
MAKE CERTAIN THAT NOSE AND LH MAIN GEAR SAFETY DEVICES ARE IN POSITION.

(8) On First Officer's instrument panel :

(a) Place landing gear Normal control lever in UP position.

Aural warning sounds.

(b) After RH main gear downlock release, place landing gear Normal control lever in DOWN position.

Aural warning stops sounding only when RH main gear is downlocked.

(c) Place landing gear Normal control lever in NEUTRAL position.

(d) On gears position indicating unit, make certain that the four green arrows are illuminated (gears downlocked).

(9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(10) Install safety devices on RH main gear and shortening mechanism.

(11) Remove LH main gear and shortening mechanism safety devices.

(12) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.
MAKE CERTAIN NOSE AND RH MAIN GEAR SAFETY DEVICES ARE IN POSITION.

(13) On First Officer's instrument panel :

(a) Place landing gear Normal control lever in UP position.

Aural warning sounds.

(b) After downlock release of LH main gear, place landing gear Normal control lever in DOWN position.

Aural warning stops sounding only when LH main gear is downlocked.

(c) Place landing gear Normal control lever in NEUTRAL position.

(d) On gears position indicating unit, make certain that the four green arrows are illuminated (gears downlocked).

(14) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(15) Install safety devices on LH main gear and shortening mechanism.

D. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(2) Make certain that area under the aircraft is clear.

(3) Remove safety stay.

(4) Lower the aircraft onto its wheels.

(5) Remove safety barriers.

(6) Trip, safety and tag the following circuit breakers

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
FLT CONT & NAV BUS 14XS	2-213	X 355	H 2
NAV INST BUS 13XS	13-216	X 345	G 4

(7) On centre console, on ADC control panel, place ADC1 and ADC2 switches in OFF position.

5. Main Gear Brace Strut and Nose Gear Drag Strut Downlock Visual Indicating Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183 621 lbf.)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Jacking Pad - Nose	D925370000
Safety Stay	
Electrical Ground Power Unit	
Safety Barriers	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and door Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Position safety barriers.

(7) Make certain that visor is not uplocked.

(8) Connect electrical ground power unit and energize the

aircraft electrical network (24-41-00, Servicing).

(9) Make certain that the following circuit breakers are set :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW 'A' SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW 'A' SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW 'B' SYS SUP		G 294	B 9
UC DOWNLOCK VISUAL IND		G 241	C 8
NOSE U/C W/SW 'B' SUP		G 296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(10) Remove landing gear and shortening mechanism safety devices.

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(11) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

C. Test

(1) Open access door 221YF.

(2) Press and hold pushbutton G242.

Make certain that there is a red luminous point and white luminous beam on the downlock indicator of the nose gear drag strut (gear downlocked).

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(3) On First Officer's instrument panel, place landing gear Normal control lever in UP position. Achieve nose gear downlock release by means of hydraulic pressure.

On brace strut downlock indicator, the white luminous beam disappears ; only the red luminous point remains visible (gear down - unlocked).

(4) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

On drag strut downlock indicator.

- the white luminous beam appears as soon as the gear is down and locked.
- the red luminous point is visible.

(5) Release pushbutton G242

The white luminous beam and red luminous point disappear.

(6) Open access door 233BF.

(7) Press and hold pushbuttons G243 and G244.

Make certain that there is a red luminous point and a white luminous beam on the downlock indicator of each main landing gear brace strut (gear downlocked).

WARNING : MAKE CERTAIN THAT GEAR AND DOOR TRAVEL RANGES ARE CLEAR.

(8) On First Officer's instrument panel, place landing gear Normal control lever in UP position. Achieve main gear downlock release by means of hydraulic pressure.

On the downlock visual indicator of each brace strut, the white luminous beam disappears ; only the red luminous point remains visible (gear down - unlocked).

(9) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

On the downlock indicator of each brace strut :

- The white luminous beam appears as soon as the gear is down and locked.
- The red luminous point is visible.

(10) Release pushbuttons G243 and G244.

The white luminous beams and the red luminous points disappear.

(11) Close access doors 221YF and 233BF.

D. Close-Up

(1) On First Officer's instrument panel :

(a) Place landing gear Normal control lever in NEUTRAL position.

(b) On gears position indicating unit, make certain that the four green arrows are illuminated. (Gears downlocked).

(2) Install landing gear and shortening mechanism safety devices.

(3) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(4) Remove safety barriers.

(5) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(6) Make certain that area under the aircraft is clear.

(7) Remove safety stay.

(8) Lower the aircraft onto its wheels.

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6. FAULT ANNUNCIATOR (G81) Functional Test

A. Equipment and Materials

DESCRIPTION	PART NO.
Jack - Lifting Capability Greater than 81600 daN (183 621 12 lbf.)	07-10-0001
Safety Jack Adapter	D920113200
Balancing Device - Pyramid Adapter, LH	D921485000
Balancing Device - Pyramid Adapter, RH	D921485001
Pyramid Adapter - Lifting, LH	D924008000
Pyramid Adapter - Lifting, RH	D924008001
Jacking Pad - Nose	D925370000
Safety Stay	
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Safety Barriers	
Nose and Main Gear Wheel Change Jack	07-20-0001
Safety Collars - Main Landing Gear Door - Actuating Cylinder	D921317000
Safety Sleeve - Nose Under Carriage Doors	E925002000
Access Platform 3.220 m (10 ft. 7 in.)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On centre console, make certain that landing gear and

door Emergency control lever is in NEUTRAL position.

(4) Jack up the aircraft (Ref. 07-11-00).

(5) Position safety stay.

(6) Position safety barriers.

(7) Make certain that visor is not uplocked.

(8) Connect electrical ground power unit and energize the aircraft electrical network (24-41-00, Servicing).

(9) Make certain that the following circuit breakers are set:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
NOSE UC WEIGHT SW 'A' SYS SUP	1-213	G 291	M16
LH UC WEIGHT SW 'A' SYS SUP		G 292	M17
RH UC WEIGHT SW & DOWNLOCK 'A' SYS SUP		G 295	M18
UC POSN IND		G 51	N16
LH UC WEIGHT SW & DOWNLOCK 'B' SYS SUP	3-213	G 293	B 8
RH UC WEIGHT SW 'B' SYS SUP		G 294	B 9
UC DOWNLOCK VISUAL IND		G 241	C 8
NOSE U/C W/SW 'B' SUP		G 296	D 8
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9
3CM STN LH LT TEST SUP 2	15-216	L1004	C13

(10) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(11) On First Officer's instrument panel, position landing gear Normal control lever in DOWN position.

(12) Open main landing gear doors by operating handle located on LH main landing gear leg.

(13) Open nose gear doors by operating handle located on nose gear leg.

(14) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(15) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(16) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 3	A 8
HYD GRND CHECK OUT SEL VALVE CONT	15-216	M 626	F22

WARNING : DISPLAY WARNING NOTICES ON ENGINES 1, 2 AND 3 PROHIBITING PRESSURIZATION OF BLUE, GREEN AND YELLOW HYDRAULIC SYSTEMS BY HYDRAULIC GROUND POWER UNIT.
DISPLAY A WARNING NOTICE AT FLIGHT ENGINEER'S STATION PROHIBITING USE OF GROUND PRESSURIZING SYSTEM ELECTRIC PUMPS.

IF A HYDRAULIC GROUND POWER UNIT IS CONNECTED, DISPLAY A WARNING NOTICE ON THIS UNIT PROHIBITING PRESSURIZATION OF THE AIRCRAFT HYDRAULIC SYSTEMS.

(17) Position safety sleeves and collars on door actuating jacks.

C. Test

(1) On Flight Engineer's panel 12-214, place LIGHTS TEST switch in TEST position, and release.

On Flight Engineer's panel, on FAULT ANNUNCIATOR all lights illuminate during the test operation.

(2) Nose gear doors not-open indicating test.

WARNING : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(a) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(b) Remove safety sleeve from nose gear LH door.

(c) Manually push nose gear LH door to release it from fully open position.

LH (NOSE DOORS) light comes on during door closing.

(d) Position safety sleeve on nose gear LH door.

(e) Remove safety sleeve from nose gear RH door.

(f) Manually push nose gear RH door to release it from fully open position.

RH (NOSE DOORS) light comes on during door closing.

(g) Install the safety sleeve on nose gear RH door.

(h) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(3) Main landing gear doors not-open indicating test

WARNING : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(a) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(b) Remove safety collar from LH main landing gear door.

(c) Manually push LH main landing gear door to release it from fully open position.

LH (MAIN DOORS) light comes on during door closing.

(d) Install safety collar on LH main landing gear door.

(e) Remove safety collar from RH main landing gear door.

(f) Manually push RH main landing gear door to release it from fully open position.

RH (MAIN DOORS) indicator light comes on during door closing.

(g) Install safety collar on RH main landing gear door.

(h) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(4) Bogie beam not aligned indicating test.

WARNING : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(a) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(b) Position jack under front jacking-pad of LH main gear bogie beam.

(c) Jack the LH gear bogie beam out of line.

LH (BOGIE BEAM) light comes on.

(d) Remove jack.

LH (BOGIE BEAM) light goes off.

(e) Position jack under front jacking-pad of RH main gear bogie beam.

(f) Jack RH gear bogie beam out of line.

RH (BOGIE BEAM) light comes on.

(g) Remove jack.

RH (BOGIE BEAM) light goes off.

(h) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(5) Test of "nose and main gear RH shock absorber not extended" and "nose wheels not centred" indicating.

(a) Release pressure from nose gear shock absorber LP chamber.

WARNING : THIS TEST MUST BE CARRIED OUT WITHOUT HYDRAULIC PRESSURE.

(b) On First Officer's instrument panel, place landing gear Normal control lever in UP position.

(c) Position jack under nose gear jacking pad.

(d) Compress shock absorber.

RH - NOSE (SHOCK ABSORB) light comes on.

(e) With the tow bar, misalign nose gear wheel.

NOSE (WHEEL ALIGN) light comes on.

(f) Align wheel, reove tow bar and remove jack.

NOSE (WHEEL ALIGN) and RH - NOSE (SHOCK ABSORB) lights go off.

(g) Release pressure from RH main landing gear shock absorber.

(h) Position jack under each jacking-pad of RH main landing gear.

(i) Compress shock absorber.

RH - NOSE (SHOCK ABSORB) light comes on.

(j) Remove jack.

RH - NOSE (SHOCK ABSORB) light goes off.

(k) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(6) Test, of "LH main landing gear shock absorber not-extended" indicating.

NOTE : This test can be carried out with landing gear Normal control lever in NEUTRAL or UP position.

(a) Release pressure from LH main gear shock absorber.

(b) Position jack under each jacking-pad of LH main landing gear.

(c) Compress shock absorber.

LH (SHOCK ABSORB) light comes on.

(d) Remove jack.

LH (SHOCK ABSORB) light goes off.

D. Close-Up

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(2) Charge main gear shock absorbers (Ref. 32-11-27, Servicing).

(3) Charge nose gear shock absorber LP chamber (Ref. 32-21-24, Servicing).

(4) Remove safety sleeves and collars from nose gear and main landing gear doors.

(5) Remove safety clips and tags and reset crcuit breakers.

(6) Remove warning notices.

(7) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

WARNING : MAKE CERTAIN THAT DOOR TRAVEL RANGES ARE CLEAR.

(8) On First Officer's instrument panel, place landing gear Normal control lever in DOWN position.

(9) Close main landing gear doors, by operating handle located on LH main gear leg. Install locking cap.

(10) Close nose gear doors by operating handle located on nose gear leg. Install locking cap.

(11) On First Officer's instrument panel, place landing gear Normal control lever in NEUTRAL position.

(12) Shut down Green hydraulic system (Ref. 29-11-00, Servicing).

(13) De-energize the aircraft electrical network and disconnect electrical ground power unit (Ref. 24-41-00, Servicing).

(14) Remove access platform.

(15) Make certain that area under the aircraft is clear.

(16) Remove safety stay.

(17) Lower the aircraft onto its wheels.

(18) Remove safety barriers.

GEARS POSITION INDICATING UNIT - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The gears position indicating unit serves to indicate the various phases of nose, main and tail gear retraction and extension. The gears position indicating unit is located on the First Officer's instrument panel.

2. Indicating Unit

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Electrical Ground Power Unit	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Trip, safety and tag the following circuit breakers :

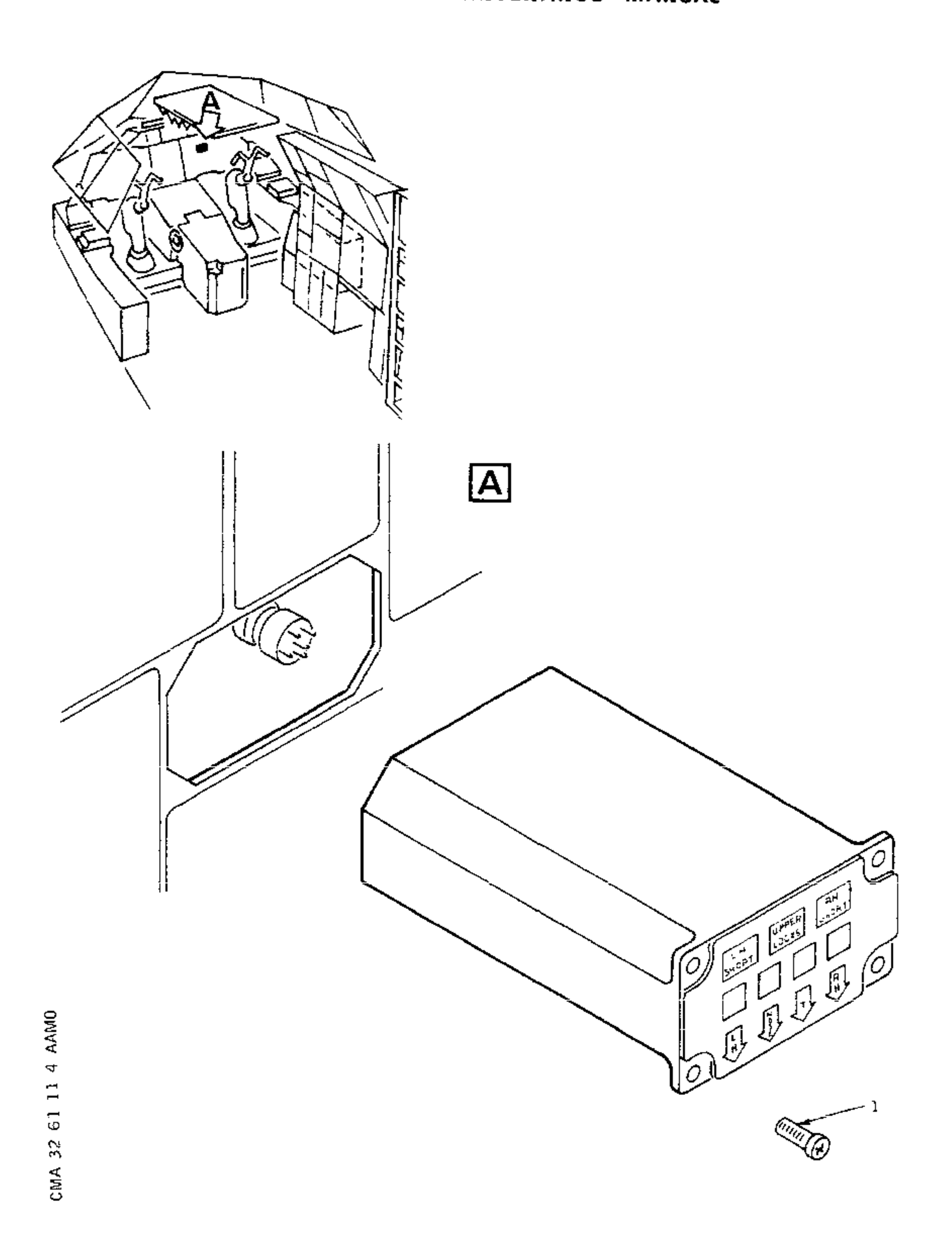
SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC SELECTOR LOWER CONT	15-215	G 4	A 9

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

C. Remove (Ref. Fig. 401)

(1) Remove screws (1).

(2) Withdraw indicating unit from panel and disconnect electrical plug.



Gears Position Indicating Unit
Figure 401

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Connect electrical plug to indicating unit.

(2) Position indicating unit and secure with screws (1).

(3) Remove safety clips and tags and reset circuit breakers

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On gears position indicating unit, green LH, NOSE, T and RH arrows are on.

(3) On First Officer's side console, press D/B LIGHT selector switch in TEST position then release.

(a) On gears position indicating unit, amber UPPER LOCKS, LH SHORT and RH SHORT lights and the red warning lights come on while switch is in TEST position.

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

MAIN GEAR VISUAL INDICATOR - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The visual indicator serves during main gear Ultimate Emergency extension to indicate downlocking of main gear telescopic brace strut (Main gear downlocked).
The visual indicator is located on telescopic brace strut body, lower part.

2. Visual Indicator

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel).	
Access Platform 3.22 (10 ft. 7 in.)	
Sealants (Ref. 20-30-00, No. 362)	

B. Prepare

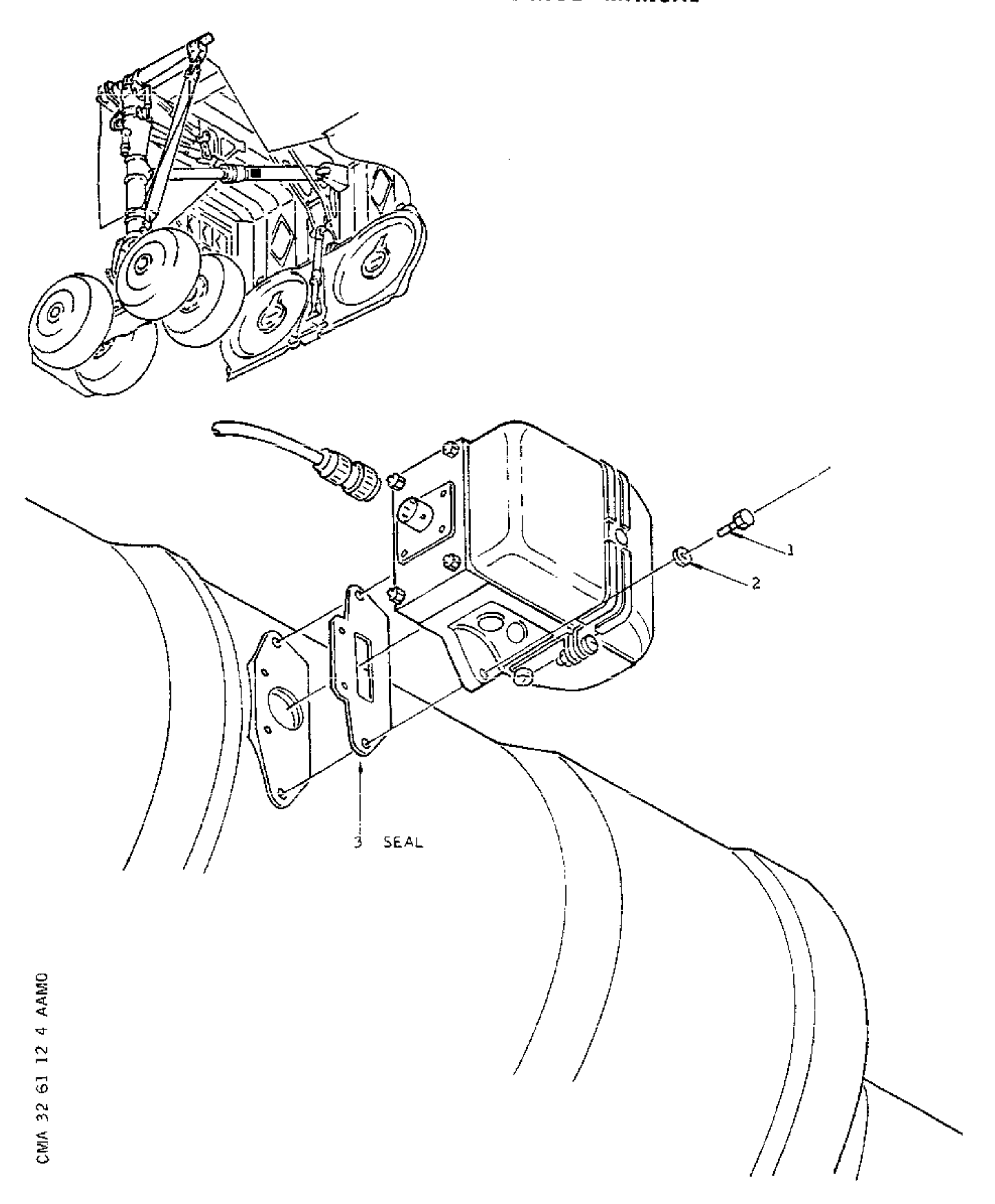
(1) Trip, safety tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC DOWN LOCK VISUAL IND	3-213	G 241	C 8

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical plug.

(2) Cut lockwire and remove screws (1), retain washers (2) for reinstallation and remove visual indicator. Retain seal (3) for reinstallation.



Main Gear Visual Indicator
Figure 401

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Install seal (3) on replacement visual indicator.

(2) Install visual indicator with washers (2) and screws (1).
Safety screws (1) with lockwire (Ref. 20-21-13).

(3) Connect electrical plug.

(4) Remove safety clip and tag and reset circuit breaker.

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Open access door 233 BF

(3) Press main gear visual indicator pushbutton (G243) or (G244) corresponding to replaced visual indicator.

- Make certain that a red dot and white light beam are visible on visual indicator.

G. Close-Up

(1) Close access door 233BF

(2)) De-energize the aircraft electrical network and disconnect electrical ground power unit.

NOSE GEAR VISUAL INDICATOR - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The visual indicator serves, during nose gear Ultimate Emergency extension, to indicate downlocking of nose gear telescopic drag strut (nose gear downlocked).
The visual indicator is located at telescopic drag strut, upper part.

2. Visual Indicator

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	
Lockwire Dia. 0.80 mm (0.032 in.) (Corrosion Resistant Steel)	
Access Platform 3.22 m (10 ft. 7 in.)	
Hydraulic Fluid (Ref. 20-30-00, No.011)	
Sealants (Ref. 20-30-00, No.362)	

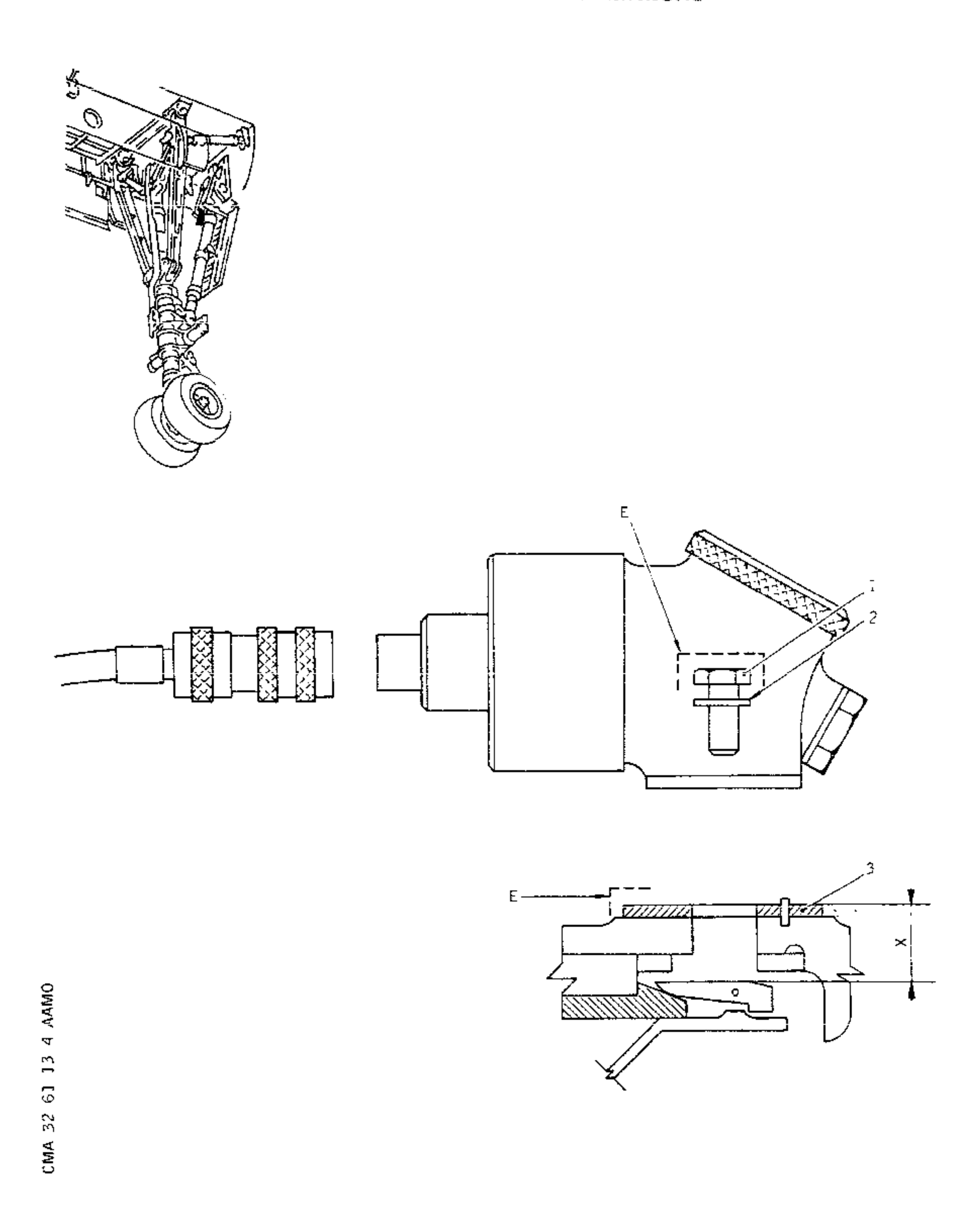
B. Prepare

(1) Trip, safety and tag the following circuit breaker :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC DOWN LOCK VISUAL IND	3-213	G 241	C 8

C. Remove (Ref. Fig. 401)

(1) Disconnect and cap electrical plug.



Nose Gear Visual Indicator
Figure 401

(2) Cut lockwire and remove screws (1), retain washers (2) for reinstallation and remove visual indicator.

D. Preparation of Replacement Component

(1) On telescopic drag strut, make certain that dimension 'x' is 14.5, + 0.3, - 0.2 mm (0.57, + 0.012, - 0.008 in.) ; telescopic drag strut downlocked.
If necessary adjust thickness of washer (3) to achieve correct dimension.

E. Install

(1) Coat seal fitted to base of visual indicator with product No.011.

(2) Position visual indicator and secure with washers (2) and screws (1).
Safety screws (1) with lockwire (Ref. 20-21-13).

(3) Connect electrical plug.

(4) Remove safety clip and tag and reset circuit breaker.

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) Remove access door 221YF.

(3) Press and hold nose gear visual indicator pushbutton (G242).

- Make certain that a red dot and white light beam are visible on visual indicator.
- Release pushbutton.

G. Close-Up

(1) Install access door 221YF.

(2) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(3) Coat areas "E" with product No.362

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LANDING GEAR FAULT ANNUNCIATOR - REMOVAL/INSTALLATION

WARNING : OBSERVE THE ELECTRICAL SAFETY PRECAUTIONS DESCRIBED IN 24-00-00, SERVICING.

1. General

The FAULT ANNUNCIATOR (G81) indicates, in the event of landing gear retraction failure, the landing gear retraction phase in which failure occurred.
The FAULT ANNUNCIATOR is on lower LH side of Flight Engineer's panel in zone 8-214.

2. FAULT ANNUNCIATOR

A. Equipment and Materials

DESCRIPTION	PART NO.
Electrical Ground Power Unit	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

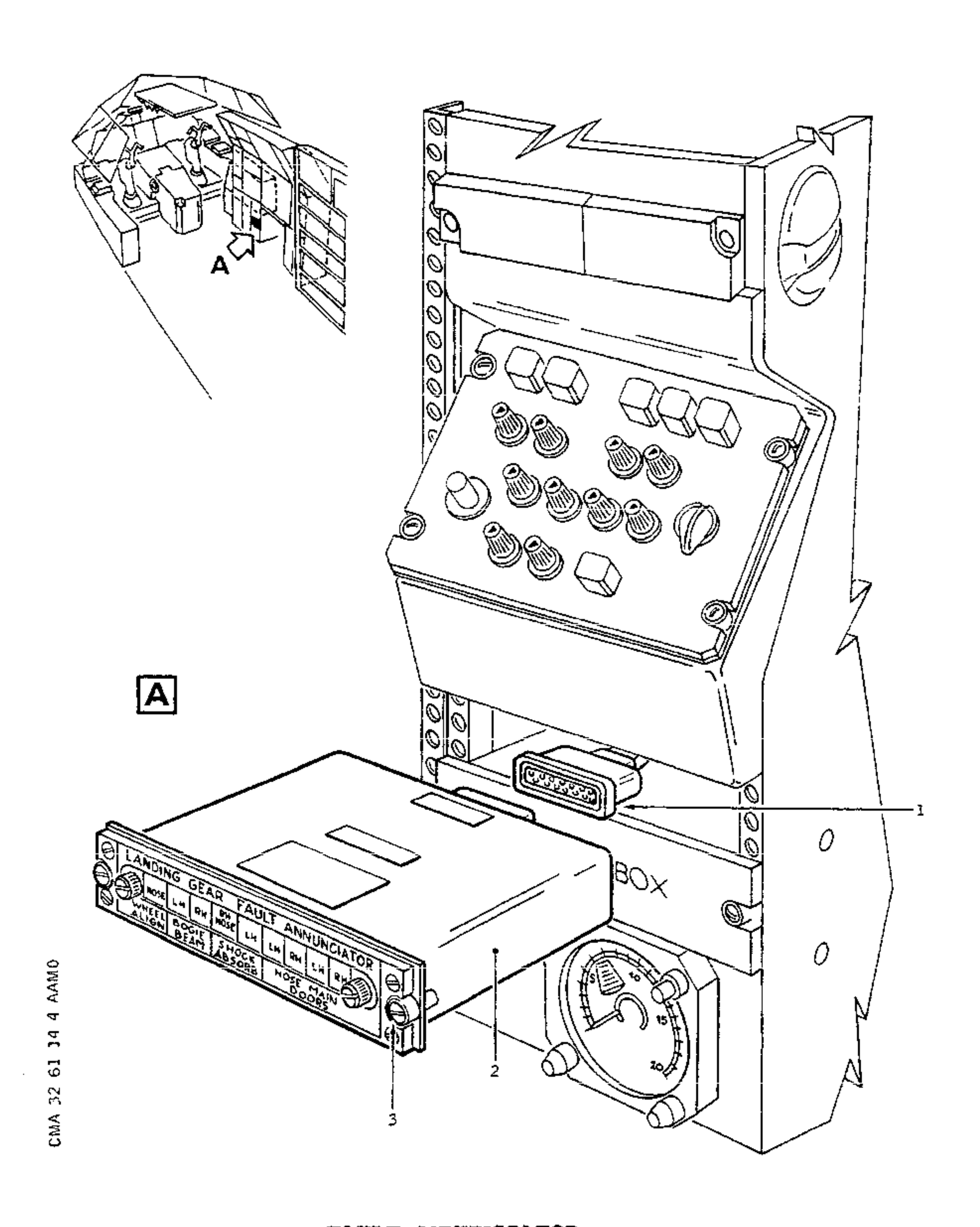
(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC SELECTOR RAISE CONT	15-215	G 2	A 7
UC SELECTOR LOWER CONT		G 4	A 9

(3) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(4) Remove screws from panel guard and swing guard to left.

C. Remove
(Ref. Fig. 401)



FAULT ANNUNCIATOR
Figure 401

(1) Release the two Dzus fasteners (3).

(2) Withdraw FAULT ANNUNCIATOR (2).

(3) Disconnect plug (1) at rear of FAULT ANNUNCIATOR.

(4) Remove FAULT ANNUNCIATOR (2).

D. Preparation of Replacement Component

Make certain that replacement FAULT ANNUNCIATOR is in correct condition ; no cracks, corrosion or signs of impact damage.

E. Install

(1) Connect plug (1) at rear of FAULT ANNUNCIATOR.

(2) Install FAULT ANNUNCIATOR (2) and push fully home.

(3) Lock Dzus fasteners (3).

(4) Swing back panel guard and secure with screws.

(5) Remove safety clips and tags and reset circuit breakers.

F. Test

(1) Connect electrical ground power unit and energize the aircraft electrical network (Ref. 24-41-00, Servicing).

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) On FAULT ANNUNCIATOR check that LH SHOCK ABSORB indicator light is on.

(4) On Flight Engineer's panel 12-214, place LIGHTS/TEST switch in TEST position then release.

(5) On FAULT ANNUNCIATOR all indicator lights illuminate while switch is in TEST position.

(6) De-energize the aircraft electrical network.

G. Close-Up

(1) Disconnect electrical ground power unit.

END OF THIS SECTION

NEXT

TAIL LANDING GEAR - DESCRIPTION AND OPERATION

1. General

The tail gear is designed to protect the engine nacelle rear section and the rear fuselage during take-off or landing with aircraft in high nose-up attitude.

In gear-up configuration, the tail gear is retracted into the fuselage and the gear bay is closed off by doors which re-establish the fuselage aerodynamic contour.

2. Description (Ref. Fig. 001)

The tail landing gear, hinging on frame 88, includes:

A. A rocker beam assembly comprising a rocker beam and a brace yoke hinging on the rocker beam.

B. An actuating cylinder hinging at its upper end on the aircraft. The lower end of the cylinder is connected to the shock absorber by a universal joint.

C. A shock absorber connected by the actuating cylinder-to-brace yoke hinge pin. The lower end of the shock absorber is attached to the rocker beam by a hinge pin.

3. Actuating Cylinder (Ref. Fig. 002)

A. Description

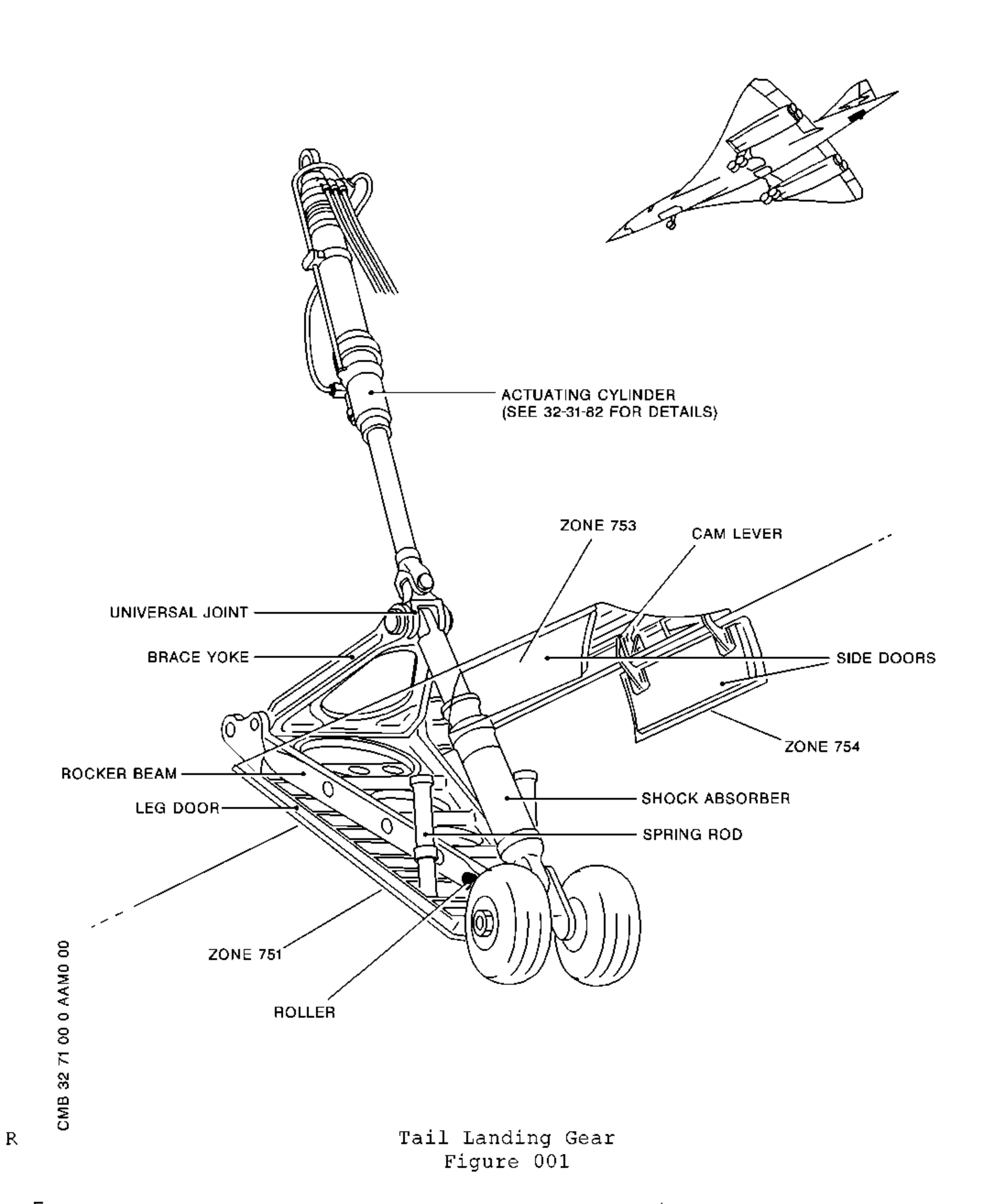
This is a double acting hydraulic actuating cylinder with automatic locking of the sliding rod in retracted and extended positions (Ref. 32-31-82).

The actuating cylinder comprises:

(1) A cylinder with each end extending to form a locking cylinder.

(a) Each locking cylinder includes an internal locking piston.

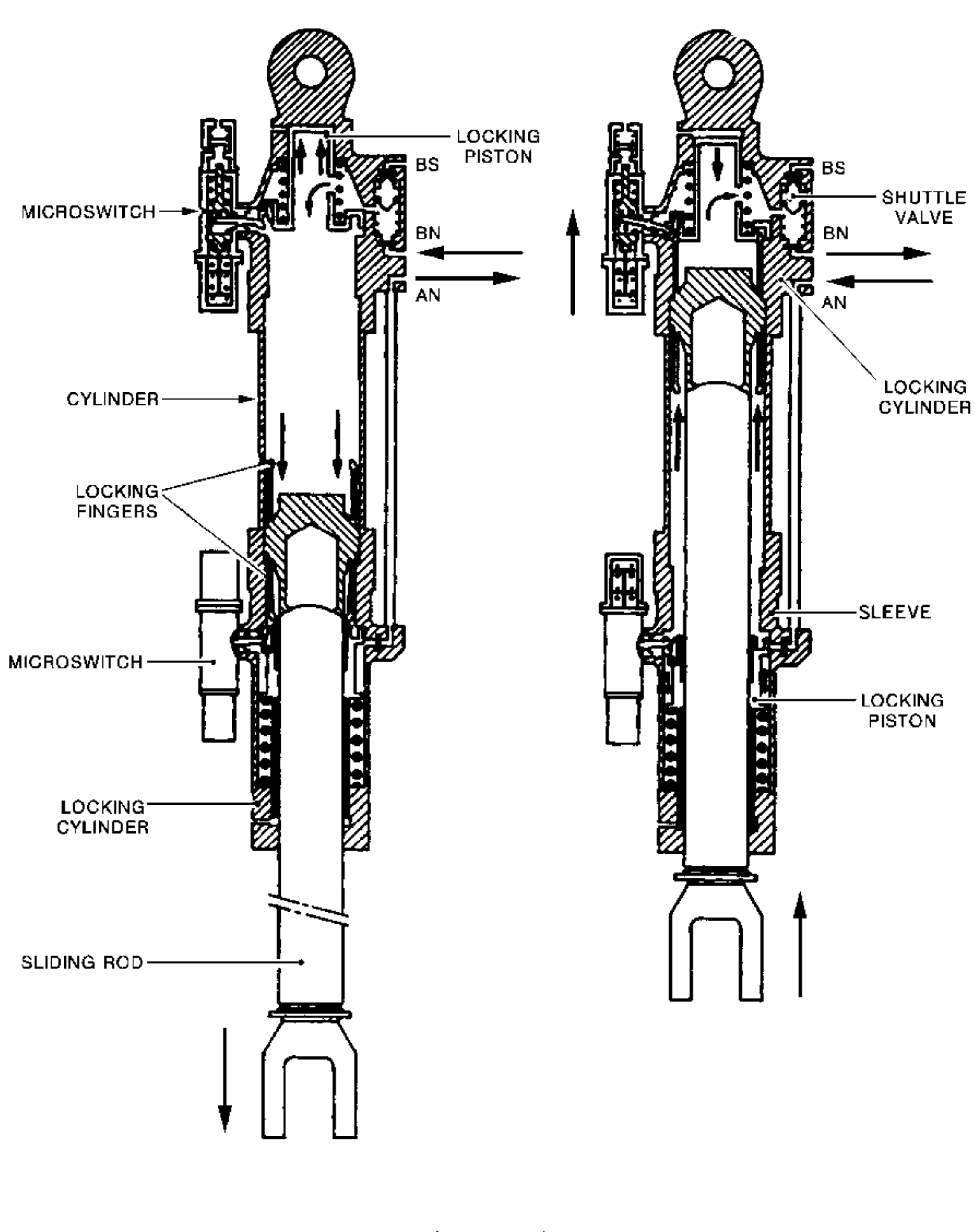
R (a1) The top locking cylinder is fitted externally with a microswitch and includes an integral Normal-Emergency supply valve block. A restrictor is fitted in the Normal supply side of the valve block.



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R Tail Landing Gear
Figure 001

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R Actuating Cylinder
Figure 002

(a2) The bottom locking cylinder includes a microswitch and a supply union.
Pressure is ported through this union during the rod retraction phase.

(2) A sliding rod incorporating an end-piston fitted with two locking fingers.

R B. Operation (Ref. Fig. 002)

The actuating cylinder fulfils three functions:

- Bracing with sliding rod extended.
- Actuation during gear extension and retraction.
- Bracing with sliding rod retracted.

(1) Actuating cylinder extension.

During actuating cylinder Normal extension, the Green pressure admitted from port (BN) of the valve block acts on the locking piston. The mechanical locking fingers are released and the rod extends under pressure applied to the actuating piston.

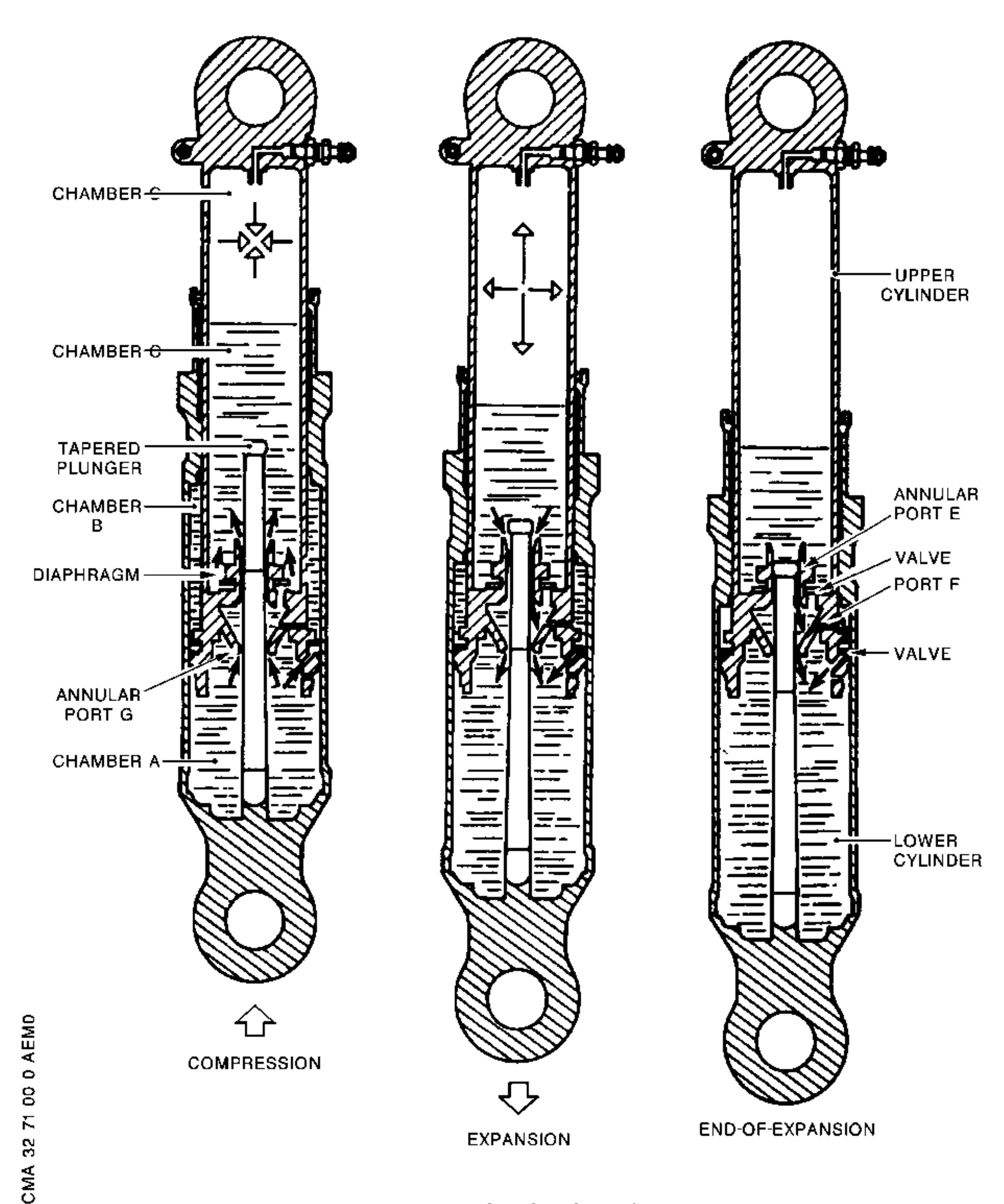
In the event of loss of Green pressure, Yellow pressure will only extend the tail gear by acting on the actuating cylinder.

The Yellow pressure, admitted from valve block port (BS) displaces the shuttle valve and acts in the same way as the Green pressure.

(2) Actuating cylinder retraction.

During retraction, Green pressure admitted through port (AN) releases the mechanical locking fingers and causes the sliding rod to retract. Return is via port (BN).

(3) At the end of extension or retraction, the locking fingers incorporated in the sliding rod mechanically engage with the locking cylinder sleeves. The locking piston spring maintains the fingers in locked position and at the same time actuates an indicating system microswitch through a pawl bearing against the end of the locking fingers.



Shock Absorber
Figure 003

4. Shock Absorber (Ref. Fig. 003)

A. Description

The shock absorber is of the oleo-pneumatic type with increased throttling at the end-of-expansion and progressive throttling during compression.

The shock absorber serves to absorb loads transmitted by the rocker beam at moment of impact of the wheels with the ground.

The shock absorber includes

(1) A lower cylinder with a plunger installed on the cylinder centreline attached to the bottom of the cylinder.

(2) An upper cylinder sliding in the lower cylinder. The end of the upper cylinder includes a valve assembly incorporating a port and diaphragm, sliding along the tapered plunger.

R B. Operation (Ref. Fig. 003)

(1) Compression

The fluid contained in chamber (A), during compression, is expelled towards chambers (B) and (C). This fluid lifts the valves which therefore have no effect on the flow of the fluid.

Restriction of the compression movement is mainly achieved by throttling of the fluid through annular port (G) which varies in section because of the tapered plunger.

As a result of fluid being ported into chamber (C), the volume of chamber (A) is reduced, resulting in an increase in pressure until balance is achieved with the compression load.

(2) Expansion.

Lowering of the external compression load results in expansion of the nitrogen. This results in expulsion of the fluid from chamber (C) to chamber (A) and also from chamber (B) to chamber (A).

The valves are maintained on their seats on the diaphragm by the pressure.

Expansion slowdown is mainly through throttling of fluid through annular port (E), ports of the chamber (B) valve, and sliding rod port (F).

At the end-of-expansion, the spherical-end of the sliding rod considerably reduces the section of port (E) and slows down the moving parts.

5. Operation (Ref. Fig. 004)

A. Ground Impact

(1) During landing or take-off with the aircraft in a high pitch-up attitude, the wheels could come into contact with the ground.

R (2) If the tail wheels contact the ground, the rocker beam is subjected to rotational movement around its attach point which tends to retract the beam. The shock absorber compresses, thus deforming the basic triangle formed by the rocker beam-shock absorber assembly.

(3) As soon as the wheels are no longer in contact with the ground, the shock absorber expands. The tail gear framework then returns to its initial position.

B. Retraction

(1) Tail gear retraction is accomplished by retraction of the actuating cylinder sliding rod.

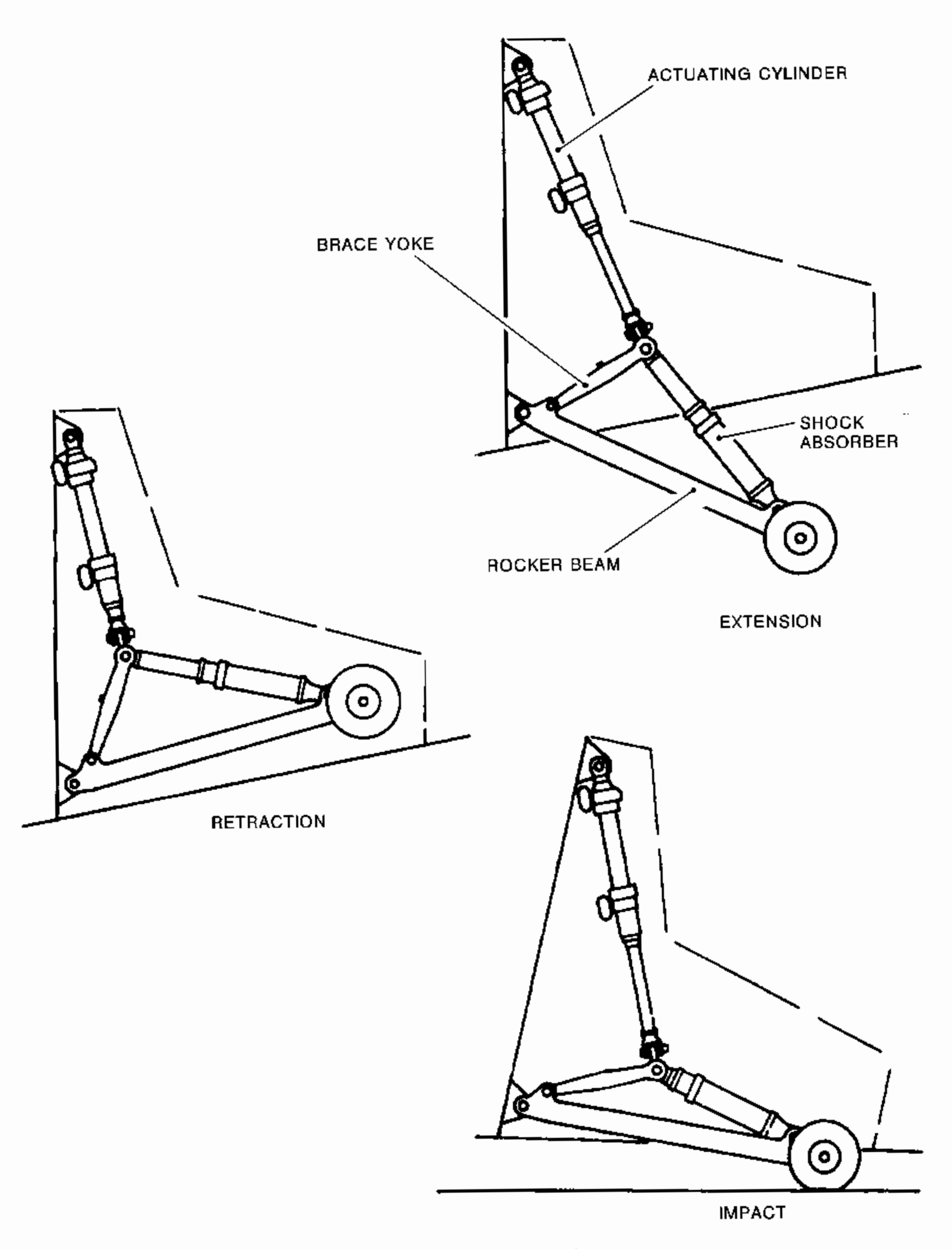
(2) In retracted configuration, the actuating cylinder is in "sliding rod uplocked" configuration and acts as a rigid (non-deformable) rod.

(3) A tail gear leg door and two side doors hinging on the
R structure then close to re-establish the fuselage aerodynamic contour.

C. Extension

(1) Tail gear extension is accomplished by extension of the actuating cylinder sliding rod.

(2) In extended configuration, the actuating cylinder is in downlocked position and acts as a rigid (non-deformable) rod.



Tail Gear - Operation
Figure 004

D. Door Control (Ref. Fig. 001)

(1) The gear leg door follows movement of the rocker beam. In tail gear retracted configuration, the gear leg door is held rigid against two structural stops by two spring rods.

(2) The side doors follow movement of the tail gear. Two rollers installed on the rocker beam actuate two cam levers hinging on the structure. These levers act on two rods which cause the side doors to either open or close.

TAIL LANDING GEAR - REMOVAL/INSTALLATION

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The tail landing gear consists of a rocker beam/shock absorber assembly hinged on structure by means of two fork fittings. The shock absorber is attached to the rocker beam at the lower part and to the actuating cylinder at the upper part by means of a universal joint.

2. Tail Landing Gear

A. Equipment and Materials

DESCRIPTION	PART NO.
Sling - tail landing gear and jack	D935174002
Locking sleeve - tail landing gear jack	D925406000
Guide and extraction cone	C47162
Access platform 4.060 m (13 ft 7 in)	-
Circuit breaker safety clips	-
Common grease (Ref. 20-30-00, No.051)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position. Display a warning notice in the flight compartment prohibiting use of this lever.

(3) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform.

(5) Install locking sleeve D925406000.

(6) Install sling D935174002.

(7) Remove tail gear wheels (Ref. 12-37-00).

(8) Remove tail gear leg door (Ref. 32-71-11, Removal/ Installation).

(9) Remove spring rods (Ref. 32-71-13, Removal/Installation).

C. Remove

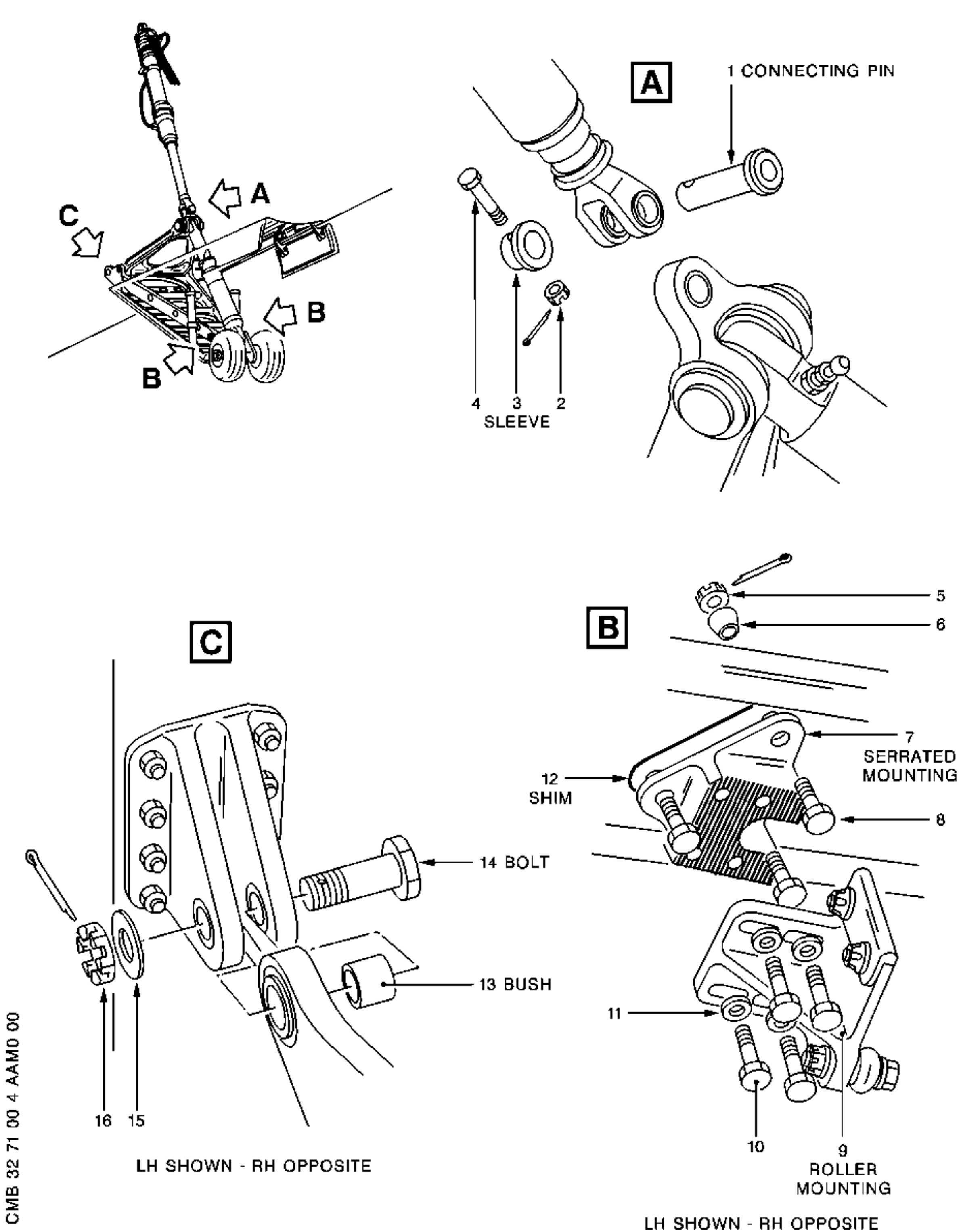
R (1) Disconnect tail gear from actuating cylinder. (Ref. Fig.
R 401, Detail A).

R (a) Remove and discard cotter pin, remove nut (2).

R (b) Remove lock bolt (4) and retain with sleeve (3) for re-installation.

(c) Remove connecting pin (1) using guide and extraction cone C47162.

(2) Disconnect bonding jumper at aircraft structure.



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R

Tail Landing Gear
Figure 401

(3) Disconnect tail gear from hinges on structure (Ref. Fig. 401, Detail C).

(a) Remove and discard cotter pins, remove nuts (16).

(b) Retain washers (15) for reinstallation.

(c) Remove bolts (14).

(d) Retain bush (13) for reinstallation.

(4) Remove tail gear.

D. Preparation of Replacement Component

(1) On removed component (Ref. Fig. 401, Detail B).

(a) Remove roller-mountings (9).

(a1) Cut and remove lockwire, remove bolts (10). Retain washers (11).

(b) Remove serrated mountings (7).

(b1) Remove cotter pins, remove nuts (5) and bolts (8) retain washers (6) and shims (12) for reinstallation.

(2) On replacement component (Ref. Fig. 401, Detail B and C).

(a) Coat bushes (13) with product No.051 and install in bores of tail gear lower fittings.

(b) Position serrated mountings (7) with shims (12) between mountings and rocker beam.
Install mountings (7) with bolts (8) washers (6) and nuts (5). Safety nuts (5) with cotter pins.

(c) Install roller-mountings (9) with bolts (10) and washers (11). Torque-tighten bolts (10) to between 70 and 80 lbf in (0.79 and 0.90 mdaN). Lockwire bolts (10).

E. Install

(1) Using sling D935174002, lift tail gear and offer up lower attachment fittings to the corresponding fittings on structure.

(a) Reinstall bush (3) into hinge.

(b) Coat bolts (14) with product No.051.

(c) Install bolts (14), heads facing inboard.

(d) Install washers (15).

(e) Install nuts (16). Torque to between 50 and 52.5 lbf ft (6.8 and 7 mdaN).

R (f) Safety bolts (14) with new cotter pins.

(2) Using sling D935174002, hold tail gear and connect actuating cylinder fork-fitting to universal joint upper attachment fitting.

(a) Coat pin (1) with product No.051.

(b) Install pin (1) head upwards using guide and extraction cone C47162.

(c) Install sleeve (3).

(d) Install stop bolt (4) head upwards. Tighten nut (2) until locking holes are aligned. Torque nut (2) to maximum value of 18 lbf in (0.2 mdaN).

R (e) Safety nut (2) with new cotter pin.

(3) Connect bonding jumper to structure.

(4) Remove sling D935174002.

(5) Install wheels (Ref. 12-37-00).

(6) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(7) Remove locking sleeve D925406000.

(8) Remove safety clips and tags and reset circuit breakers.

F. Adjustment/Test

Adjust tail gear (Ref. 32-71-00, Adjustment/Test).

G. Close-Up

(1) Install spring rods (Ref. 32-71-13, Removal/Installation).

(2) Install tail gear leg door (Ref.32-71-11, Removal/Installation).

(3) Carry out tail landing gear retraction and extension (Ref. 32-71-00, Adjustment /Test).

TAIL LANDING GEAR - ADJUSTMENT/TEST

WARNING: MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

R This Adjustment/Test has been written to give the procedure that is
R to be followed whenever a tail landing gear has been replaced, or it
R is considered that the setting of the unit is in need of adjustment.
R

2. Adjustment of Tail Landing Gear

A. Equipment and Materials

	DESCRIPTION	PART NO.
	Ground power unit - hydraulic - power and preliminary testing	EMH398E
B B	Test Set - tail landing gear	D921593000 or 2-32-0042-1BA
B B	Castellated wrench	C47147 or 2-32-1520-1BA
	Sling - tail landing gear and jack	D935174002
	Positioning tool - 'A' frame - tail bumper door	E925097000 or E925097001
	Guide and extraction cone	C47162
	Circuit breaker safety clips	-
	Access platform 4.060 m (13 ft 7 in)	-
	Lockwire - dia. 0.7 mm (0.028 in)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position. Display a warning notice in the flight compartment prohibiting lever operation.

(3) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform under tailcone.

(5) Open access door 313AB.

B (6) Pass cable loom of test set 2-32-0042-1BA through door 313AB and connect to tail gear microswitch wiring plug at aircraft structure and the socket of the electro-hydraulic selector.

B (7) Connect test set 2-32-0042-1BA to a 28 VDC power supply.

NOTE: Check on test set that the three position switch is
R in NEUTRAL position and power supply switch is in
R OFF position.

(8) Connect hydraulic ground power unit to Green hydraulic system.

(9) Disconnect link rods (11) from levers (6) (Ref. Fig. 502).

R (10) Disconnect both of the tensioning springs (1) from the lever (4) (Ref. Fig. 502).

(11) Remove tail gear leg door (Ref. 32-71-11, Removal/ Installation).

R C. Adjustment of the Fork-end Fitting of the Tail Landing Gear (TLG)
R Actuating Cylinder (Ref. Fig. 501 and 502)

(1) Loosen locknuts (2) and unscrew stops (3) until end no longer protrudes through support.

(2) Pressurize Green hydraulic system (minimum pressure and flow) (Ref. 29-11-00, Servicing).

B (3) Energize test set 2-32-0042-1BA.

CAUTION: DURING RETRACTION OF TAIL GEAR, MAKE CERTAIN THAT PAD (21) DOES NOT CONTACT ANY PART OF THE STRUCTURE.

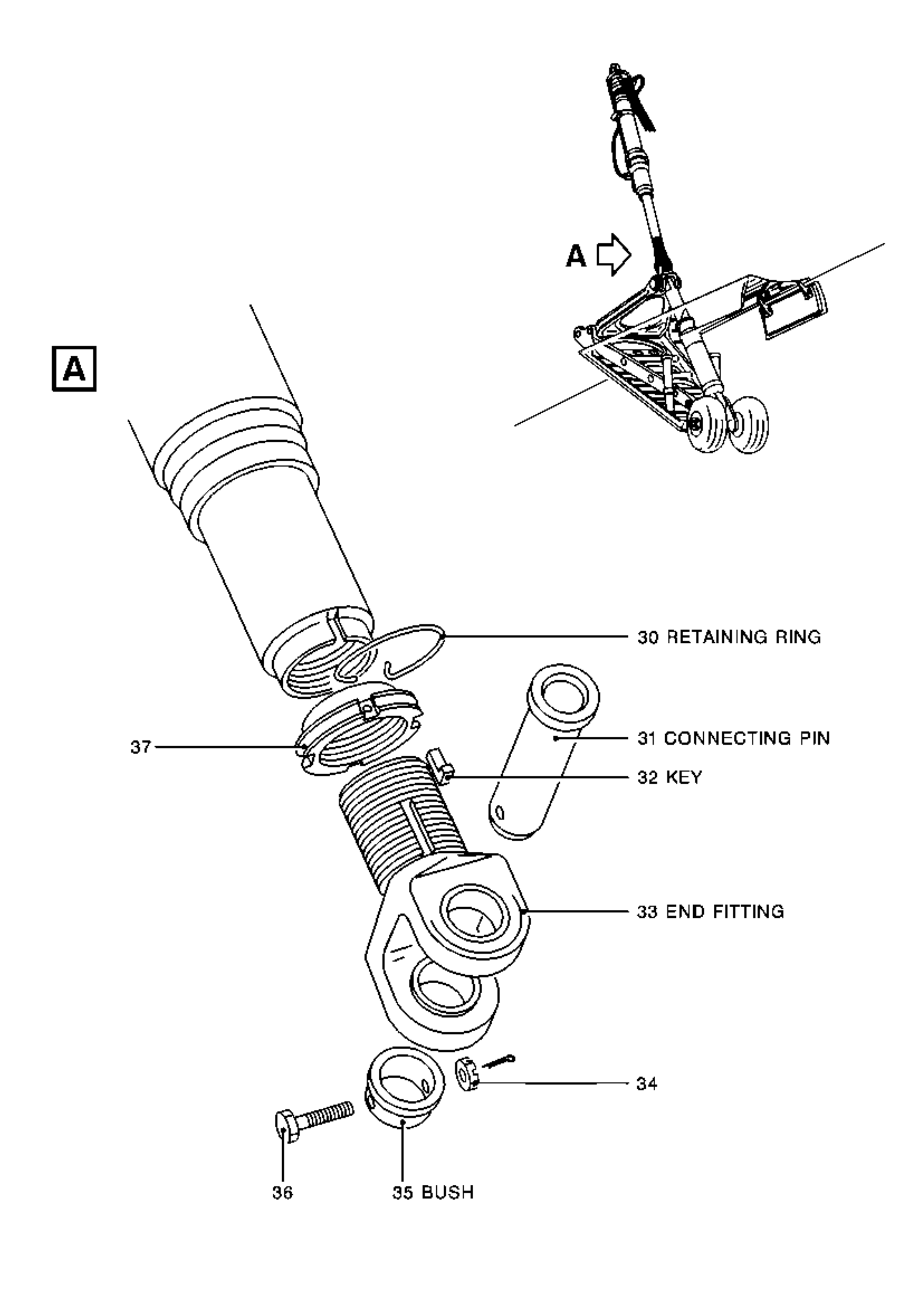
(4) Slowly retract and uplock tail gear using test set
B 2-32-0042-1BA.

(5) Depressurize Green hydraulic system and de-energize test set
B 2-32-0042-1BA.

R (6) Remove the cotter pin, and with the weight of the tail
R landing gear supported by sling D935174002, remove and
R retain nut (34), lock bolt (36), bush (35) and connecting
R pin (31) using guide and extraction cone C47162 (Ref. Fig. 501).

(7) Raise gear slightly and install positioning tool E925097000, then rest rocker beam on tool.

R NOTE: The correct installation of the positioning tool
R E925097000 is as follows (Ref. Fig. 503):
R Install the tool against the forward face of the
R front hinge fittings of the tail landing gear
R moveable doors, looking aft. The tool should rest
R on LH and RH edge members E26 6987, with the spring
R E88 7743 on each hinge bracket temporarily detached.

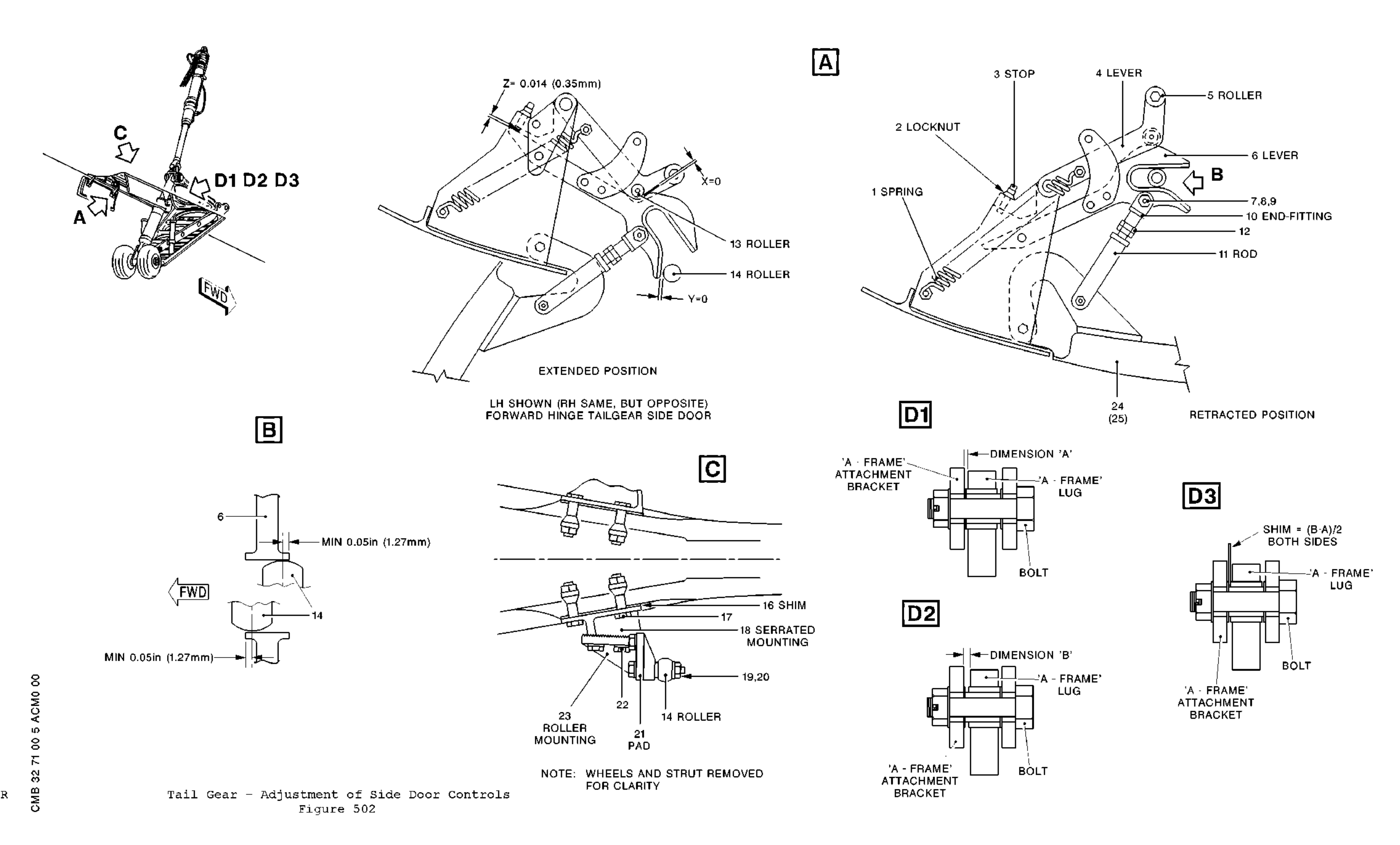


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CMB 32 71 00 5 AAM0 00

R Tail Gear - Jack Adjustment
Figure 501

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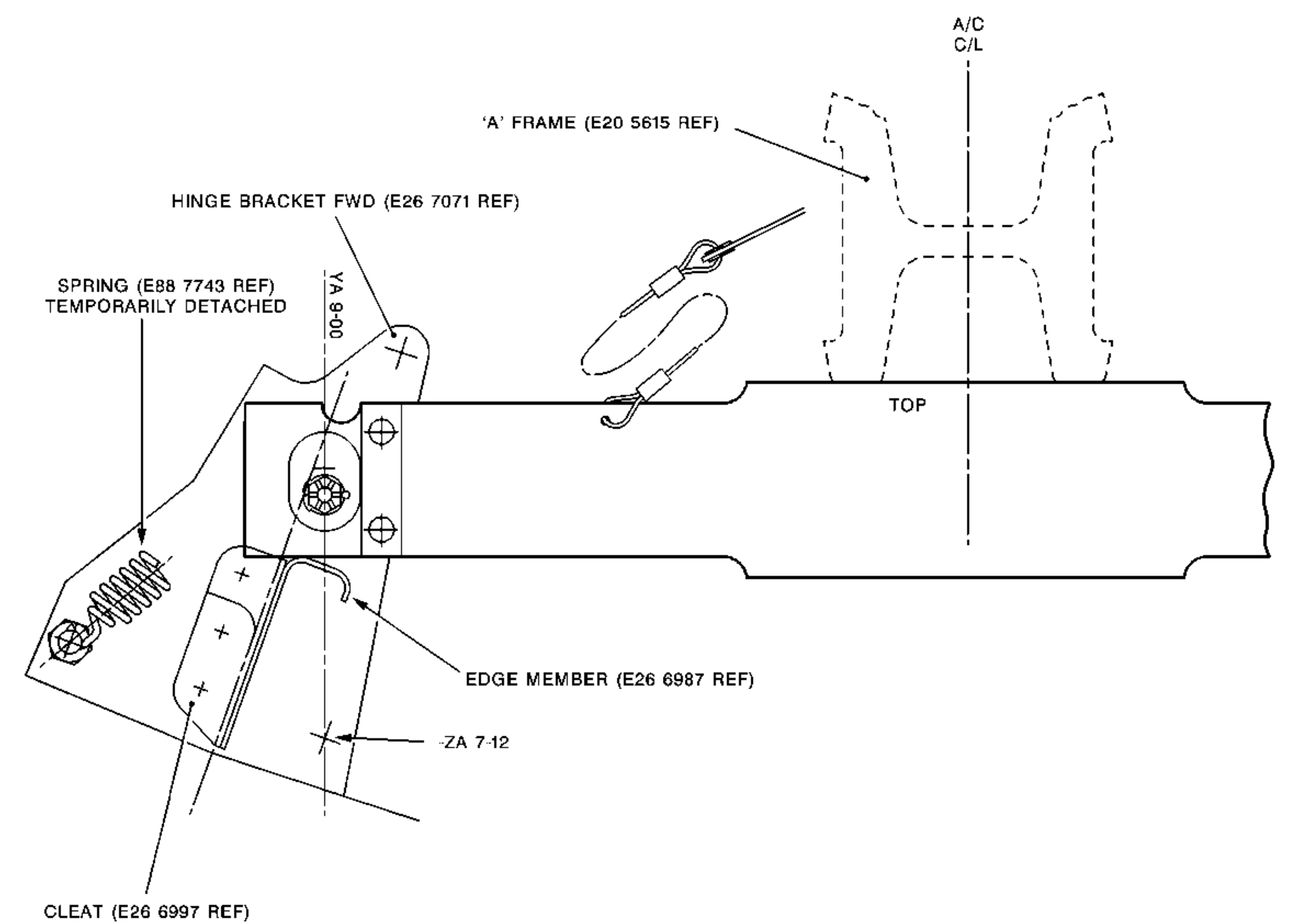


R CMB 32 71 00 5 ACM0 00

Tail Gear - Adjustment of Side Door Controls
Figure 502

R
R

CMB 32 71 00 0 ACM0 00



PART VIEW LOOKING AFT (SYMMETRICAL ABOUT A/C C/L) FWD HINGE BRACKET
AT (XA 2121-88) SHOWING LOCATION OF 'A' FRAME POSITIONING TOOL.

Location of 'A-frame' Positioning Tool
Figure 503

R (8) To verify the correct alignment of the fork end fitting of
R the actuating cylinder, proceed as follows (Ref. Fig. 501):

R - remove, and retain, the retaining ring (30)
RB - unscrew nut (37). Use wrench 2-32-1520-1BA
R - remove, and retain, the locking key (32)
R - set the length of the actuator until the connecting
R pin (31) can be entered through the fitting and the
R tail landing gear leg easily
R - do this by adjusting the length of fork end-fitting (33).

R <u>NOTE</u>: Make sure that the witness hole in the fork
R end-fitting does not show with the actuator set to
R the required length.

R - align the keyway and install the key (32)
RB - tighten nut (37). Use wrench 2-32-1520-1BA
R - install the retaining ring (30).

R (9) Do not re-connect the actuating cylinder to the tail landing
R gear at this time. Secure the actuating cylinder,
R temporarily, to the tail structure. Use lashing-tape type
R material to do this, do not use locking wire.

R D. Adjustment of the Tail Landing Gear Side Doors (Zone 753 and
R 754), (Ref. Fig. 502, Detail A)

R (1) Adjust centring of rollers (14) on levers (6) as follows:

- Cut and remove lockwire and slightly back-off screws (22)
- Adjust roller mounting (23) so that the contact point
R between roller (14) and lever (6) is at the centre of the
R lever
- Tighten screws (22) but do not safety at this stage.

R (2) Mark position of mounting (23) so that it can be installed
in same position after removal.

R (3) Remove positioning tool E925097000 and extend tail gear.

R (4) Insert a 0.014 in (0.35 mm) feeler gauge between the stop
R screw (3) and the operating lever (6).

R NOTE: When slackening the stop screw, make sure that its
R thread insert does not rotate. A loose thread insert
R will prevent correct locking and invalidate
R adjustments. Loose thread inserts are to be replaced
R before subsequent work steps are carried out.

R (5) Hold the operating lever (6) hard against the roller (13), so that dimension 'X' equals zero. Adjust the stop screw (3) until it touches the feeler gauge. Whilst ensuring that contact is maintained between the operating lever (6) and the roller (13), and that the feeler gauge is still in place, tighten the locknut (2). Torque-tighten locknut to between 74 and 80 lbf in (0.83 and 0.90 mdaN).

NOTE: This is dimension 'Z' on Figure 502.

(6) Remove the feeler gauge from between the stop screw(3) and the operating lever (6).

(7) Re-check this dimension after tightening locknut, and re-adjust if necessary.

(8) Remove nut (19), washer (20) and roller (14).

(9) Slowly raise gear until pad (21) contacts roller (5), and maintain gear in this position.

(10) Pull the 'A-frame' to the left, and whilst holding this position, record the distance between the inner face of the outboard attach bracket lug and the outer face of the 'A-frame' LH lug (see Figure 502, Detail D).
This is dimension 'A'.

(11) Pull the 'A-frame' to the right, and whilst holding this position, record the new distance between the inner face of the outboard attach bracket and the outer face of the 'A-frame' LH lug (see Figure 502, Detail D).
This is dimension 'B'.

(12) Subtract dimension A from dimension B. If the resulting value is 0.010 in (0.25 mm) or less, the 'A-frame' does not require centring and work step (13) can be omitted. If the result is greater than 0.010 in (0.25 mm), divide the value by 2 to establish the thickness of shims required to centre the 'A-frame).

(13) Insert one shim of the thickness calculated in workstep (12) into the bearing gap on each side of the 'A-frame' (see Figure 502, Detail D). The 'A-frame' is now shimmed into its central position.

R (14) Install roller (14), washer (20) and nut (19). Measure the gap between the roller (14) and the outboard face of the lever (6). This is dimension 'Y'. Adjust shims (16) under serrated mounting (18) as necessary.

NOTE: A clearance must be avoided. If a touch cannot be achieved within the limits of the thinnest shim (0.01 in (0.254mm)) then a slight interference must exist.

(15) Torque-tighten the nut (19) to between 50 and 60 lbf in (0.56 and 0.67 mdaN). Safety the nut with a new cotter pin, and remove the shims from either side of the 'A-frame'.

(16) Repeat paras. (1) to (15) on the other tail landing gear side door.

(17) Retract tail gear and position using tool E925097000. Check that roller (14) contacts upper jaw of lever (6).

(18) Connect link rod (11) to lever (6) with bolt (7) without installing washer and nut.

(19) Check that door comes flush with structure at aircraft centreline.
Tolerance: ± 0.059 in (± 1.5 mm).
If necessary adjust length of link rod (11) as follows:

- Remove bolt (7) and disconnect link rod (11).
- Cut and remove lockwire and loosen locknut (12).
- Turn fork end-fitting (10) to achieve rod dimension required.
- Tighten locknut (12). Torque-tighten locknut (12) to between 160 and 180 lbf in (1.80 and 2.03 mdaN) and safety with lockwire (Ref. 20-21-13).

NOTE: Make certain that, at the end of this procedure, the link rod (11) remains in safety. To check the link rod is in safety, make sure that the witness hole is not visible.

(20) Connect link rod (11) to lever (6) with bolt (7), washer (8) and nut (9). Torque-tighten nut (9) to between 50 and 60 lbf in (0.56 and 0.67 mdaN) and safety with a cotter pin.

(21) Remove the positioning tool E925097000.

(22) Install the tensioning springs (1) to lever (4). Make sure that each spring is fully engaged in the grooves on the spindles.

R (23) Manually apply a firm closing load to LH door (zone 753) and slowly lower tail gear.
Make certain that the door locks normally in open position.
Repeat this procedure several times.

R (24) Perform above operation on RH door (zone 754).

R (25) Connecting actuating cylinder to rocker beam structure (Ref. Fig. 501).

(a) Install connecting pin (31) head upwards using guide and extraction cone C47162.

(b) Install bush (35) with holes aligned to receive stop bolt (36).

(c) Install stop bolt (36) head upwards and nut (34). Nut (34) maximum torque: 18 lbf in (0.2 mdaN). Safety nut (34) with a new cotter pin.

R (26) Check that LH and RH doors (zones 753, 754) come flush with the tailcone skin. If necessary adjust doors as described in para. D. items (17) to (19).

R (27) Install tail gear leg door (Ref. 32-71-11, Removal/ Installation).

R (28) Remove sling D935174002.

R E. Final Adjustment/Check - Applicable to both Doors

<u>CAUTION</u>: IF THERE IS INADEQUATE ADJUSTMENT IN THE CHECK THAT FOLLOWS, ADJUST THE ACTUATOR ROD END UNTIL THIS SETTING CAN BE ACHIEVED (REF. PARA. C).

(1) Pressurize Green hydraulic system (minimum pressure and flow) (Ref. 29-11-00, Servicing) and energize test set
B 2-32-0042-1BA.

RB (2) Using test set 2-32-0042-1BA, slowly extend tail gear and manually apply an opposing load to doors to take up play to
R simulate air loads. Make certain that the doors lock open normally.

R (3) Check that as pads (21) pass over forward faces of levers (6) the clearance between them is not less than 0.10 in (2.54 mm). If necessary adjust clearance by repositioning roller mountings (23).

R (4) During retraction and extension of the tail landing gear, make sure that the clearance between the contact point of the roller (14) and the edges of the jaws of lever (6) is never less than 0.05 in (1.27 mm) throughout the full range of movement of the roller (Ref. Fig. 502, Detail B).

R NOTE: Use engineers blue to highlight the trajectory of the roller contact point. Remove the engineers blue after you have checked the trajectory.

R (5) Torque-tighten bolts (22) to between 70 and 80 lbf in (0.79 and 0.90 mdaN). Safety bolts (22) with lockwire (Ref. 20-21-13). Tighten nuts on bolts (17) and safety with cotter pins.

R (6) Check the locking of each door individually by manually unlocking the door and allowing it to open gently under the spring load. Close doors on completion.

R (7) Carry out several hydraulic retraction and extension cycles at normal system pressure. From extended position, slowly raise gear using reduced hydraulic pressure until the doors are nearly closed but not locked. Manually apply a closing load to the LH door and maintain this load as the gear is slowly lowered and the door is being pushed open. Make certain that the door is positively locked in the opened position.

WARNING: MANUAL LOADS MUST NOT BE APPLIED TO DOOR WHEN GEAR IS BEING LOWERED UNDER FULL SYSTEM PRESSURE.

R (8) Repeat paras. (1) to (7) for the other hinged tail landing gear door.

R (9) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

B (10) De-energize test set 2-32-0042-1BA.

R F. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

B (2) Disconnect test set 2-32-0042-1BA cable loom from aircraft wiring.

(3) Connect tail gear microswitch wiring plug at aircraft structure and connect the electro-hydraulic selector plug.

R (4) Install access door 313AB.

(5) Remove safety clips and tags and reset the circuit breakers tripped in para. B.

(6) Remove access platform.

3. Test of Tail Landing Gear

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground power unit - hydraulic-power and preliminary testing	EMH398E
Test Set - tail landing gear	D921593000 or 2-32-0042-1BA
Circuit breaker safety clips	-
Access platform 4.060 m (13 ft 7 in)	-

B (margin mark beside "Test Set - tail landing gear")

B. Prepare

(1) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position. Display a warning notice in the flight compartment prohibiting lever operation.

(2) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(3) Position access platform.

(4) Open access door 313AB.

R (5) Install the Test Set.

RB (a) Pass the cable loom of test set 2-32-0042-1BA through door 313AB.

R R (b) Disconnect the plug from the socket on the hydraulic selector.

(c) Connect the test set to:

- The plug connector on the cable
- The electrical-receptacle of the hydraulic-selector valve.

B (6) Connect test set 2-32-0042-1BA to a 28 VDC power supply.

NOTE: Check on test set that three-position switch is in
R NEUTRAL position and power supply switch is in OFF position.

(7) Connect hydraulic ground power unit to Green hydraulic system.

WARNING: MAKE CERTAIN THAT ACTUATING CYLINDER SAFETY COLLAR IS NOT INSTALLED.

C. Test

(1) Pressurize Green hydraulic system (minimum pressure and flow) (Ref. 29-11-00, Servicing).

B (2) Energize test set 2-32-0042-1BA by means of power supply switch.

R R (3) With tail gear extended, the test set tail gear LOCKED DOWN indicator light comes on.

R (4) On test set, place the three-position switch in RAISE position.

R R (5) On test set, the RAISE indicator light comes on and the TAIL GEAR LOCKED DOWN indicator light goes off.

R R (6) When tail gear uplocks, the test set TAIL GEAR LOCKED UP indicator light comes on.

R R R (7) Return the three-position switch to NEUTRAL position. The RAISE indicator light goes off, the TAIL GEAR LOCKED UP indicator light remains on.

(8) Proceed with tail gear extension. Place the three-position
R switch in LOWER position.

R R (9) On test set, the LOWER indicator light comes on and TAIL GEAR LOCKED UP indicator light goes off.

R (10) When tail gear downlocks, test set TAIL GEAR LOCKED DOWN
R indicator light comes on.

R (11) Return the three-position switch to NEUTRAL position. The
R LOWER indicator light goes off, the TAIL GEAR LOCKED DOWN
R indicator light remains on.

(12) Proceed with several tail gear retraction and extension cycles.

(13) Downlock tail gear.

(14) Shut down and depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

B (15) De-energize test set 2-32-0042-1BA.

D. Close-Up

(1) Shut down and disconnect hydraulic ground power unit.

B (2) Disconnect the cable loom of test set 2-32-0042-1BA from aircraft wiring.

(3) Connect tail gear microswitch wiring plug at aircraft structure and connect the electro-hydraulic selector plug.

R (4) Install access door 313AB.

(5) Remove safety clips and tags and reset the circuit breakers tripped in para. B.

(6) Remove access platform.

TAIL LANDING GEAR - INSPECTION/CHECK

WARNING: CHECK THAT LANDING GEAR GROUND SAFETY DEVICES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. General

Visual check of tail landing gear.

Quick check of tail landing gear door and operating mechanism play.

Detailed check of tail landing gear door and operating mechanism fits and clearances.

2. Tail Gear

A. Equipment and Materials

DESCRIPTION	PART NO.
Locking sleeve - tail landing gear jack	D925406000
Access platform 13 ft 7 in (4.060 m)	-
Circuit breaker safety clips	-
General lubricants (Ref. 20-30-00, No. 051)	-

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform.

(5) Install locking sleeve D925406000.

C. Visual Check

(1) Make certain that all nuts, bolts and threaded bushings are tightened and correctly safetied (lockwire, pins).

(2) Make certain that hydraulic lines do not foul the structure or come into contact with other hydraulic lines.

(3) Check electrical wiring for correct condition and attachment.

(4) Check bonding jumpers for correct condition.

(5) Check hydraulic equipment located adjacent to tail gear for evidence of leakage.

(6) Check chromed surfaces of shock absorber and actuating cylinder sliding rods for signs of scoring or flaking.

(7) Make certain that wheel nut stop bolts are safetied.

(8) Make certain that wheel valve caps are installed and that tyres are in correct condition.

(9) Make certain that wheels turn freely on axles.

R (10) Disassemble and inspect the joints (Ref. Fig. 601, Detail A,
R B and C). Inspect for corrosion in the joint, and for
R deterioration of the grease.

R (a) For Detail A: See 32-71-00, Removal/Installation.

R (b) For Detail B: See 32-71-00, Removal/Installation.

R (c) For Detail C: See 32-71-00, Removal/Installation.

R CAUTION: UNLESS YOU ARE REMOVING THE TAIL LANDING GEAR
R ASSEMBLY COMPLETE, DO NOT DISASSEMBLE MORE
R THAN ONE OF THESE JOINTS AT ANY ONE TIME, TO
R DO THIS INSPECTION.

R (11) Reassemble all joints that were disassembled at para. (10).

R (a) For Detail A: See 32-71-00, Removal/Installation.

R (b) For Detail B: See 32-71-00, Removal/Installation.

R (c) For Detail C: See 32-71-00, Removal/Installation.

D. Quick Check of Tail Landing Gear Door and Operating Mechanism Play
(Ref. Fig. 602)

(1) Manually close then open each door checking action of springs (1) and lock lever (3). Spring ends must rotate freely on the anchorage pins and lock lever (3) must snap back into position against lever (5).

CAUTION: WHEN TAIL LANDING GEAR IS IN EXTENDED POSITION THE DOORS MUST BE LEFT IN OPEN POSITION.

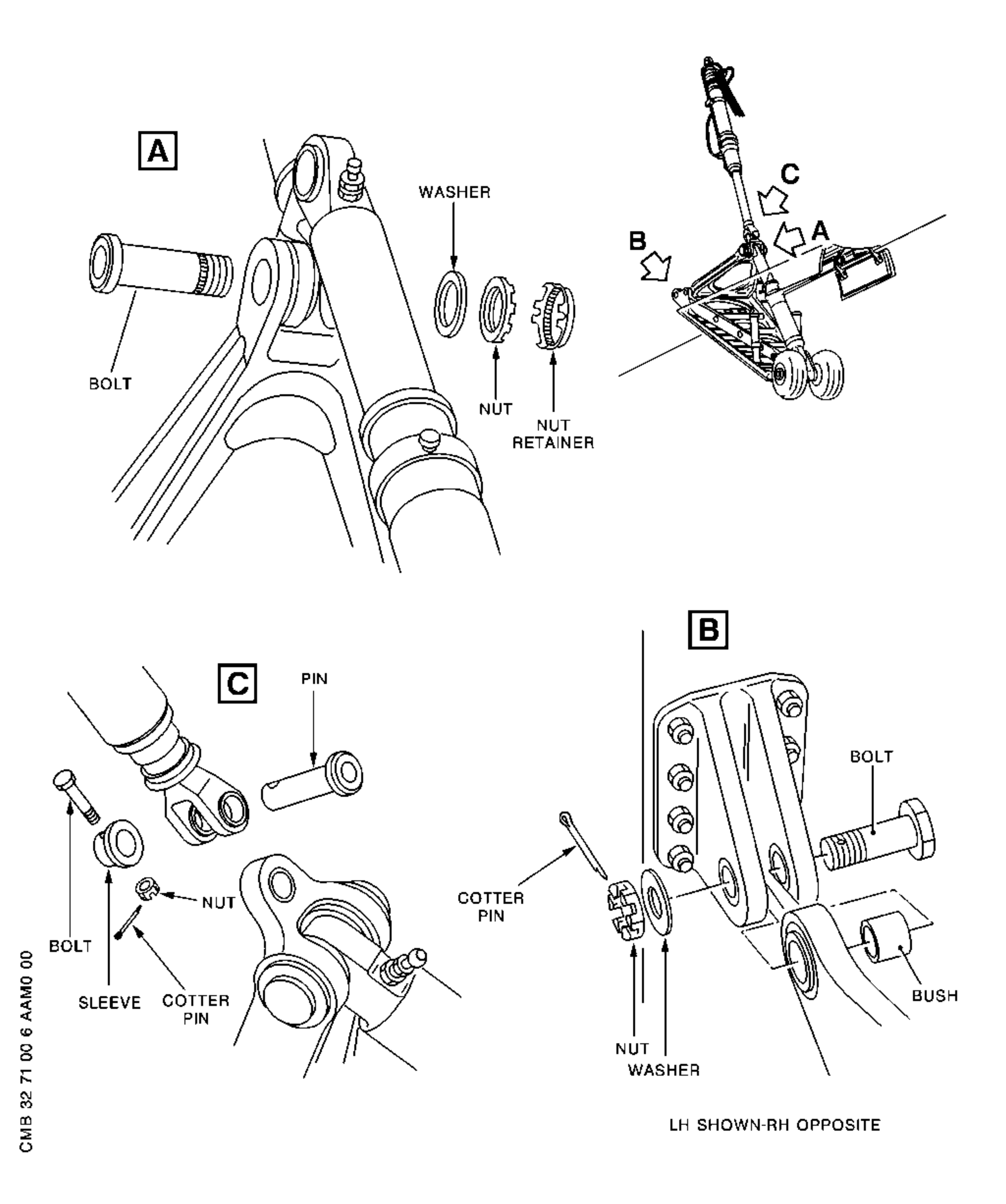
(2) Check the backlash of each door in turn. Measure the backlash at door edge adjacent to the door operating mechanism.

(a) Push LH door towards aircraft centreline and hold in this position.

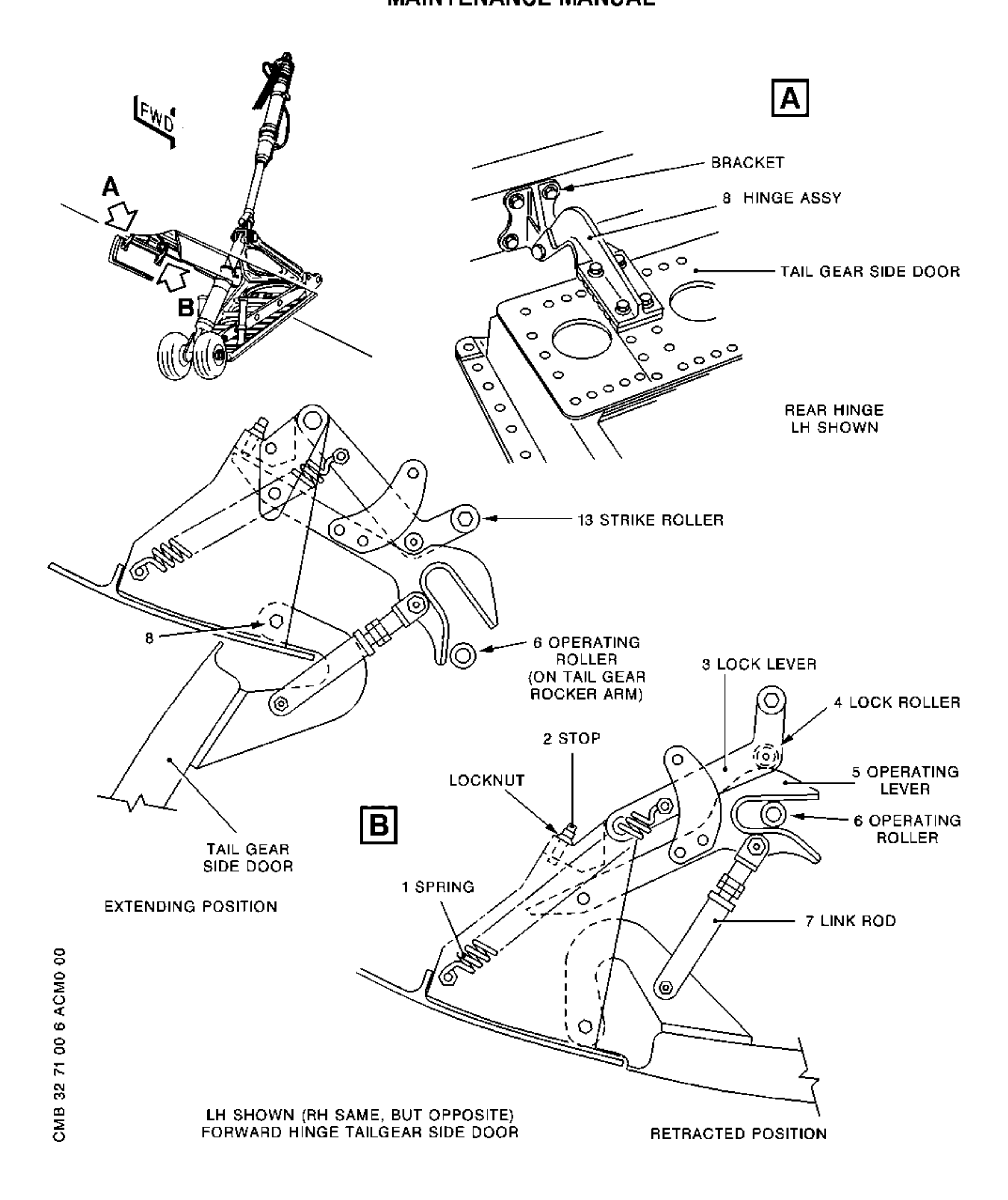
(b) Using LH door as a stationary reference point, hook the end of a steel measuring tape onto the edge of the LH door and pulling it tight, hold it horizontally resting it against the corresponding edge on the RH door. Move the RH door inboard and outboard using a load of between 3 and 4 lbf (1.33 and 1.78 daN). Measure and record the total backlash.

(c) Re-locate the tape as per (a) and (b) on RH door and check the backlash of the LH door.

NOTE: Theoretical backlash of a new mechanism and door is between 0.19 and 0.26 in (4.8 and 6.6 mm).



R Tail Landing Gear - Corrosion Inspection
Figure 601



R Tail Landing Gear Side Door Operating Mechanism
Figure 602

R (3) The allowable tolerance for backlash as noted in para. (2)
R is +0.19 in (4.8 mm) to +0.394 in (10 mm). Check for excessive backlash at the following locations:

R (a) Lift lock lever (3) and check the lower lock-roller (4)
R is free to rotate.

(b) Return lock lever (3) to locked position and push operating lever (5) upwards to take up all play. Hold in this position, gently apply an inboard, then outboard load to the door edge and check for signs of backlash in the two attachment bolts in link rod (7) (Ref. para. E.(1)(b) points C and D).

(c) Check for excessive freedom of movement in door hinges (8) (Ref. para. E.(1)(c) points E and H) and lever pivots (Ref. para. E.(1)(b) points G and F). Also check operating roller (6) (Ref. para. E.(1)(b) point B).

(4) If there are signs of excessive wear, remove parts and check wear. If necessary, replace worn parts.

R (5) Examine:

R (a) The end of the operating lever (5) for wear and damage.
R There must be no appreciable wear at at the stop screw
R (2) contact point. If an indentation can be felt in
R this area, the lever must be replaced.
R

(b) The end of the stop screw (2) for signs of excessive wear (Ref. Inspection/Check, para. E.).

R (6) Check adjustment of tail landing gear door mechanism as
R detailed in Adjustment/Test, para. D. steps (5) to (7)
R inclusive.
R

E. Detailed Check of Tail Landing Gear Door and Operating Mechanism Fits and Clearances

R
R (Ref. Fig. 604)

The points to be checked are identified by letters on the figure. The fits and clearances at the various points are identified by numbers. These numbers correspond to the item numbers in the table of fits and clearances.

R (Ref. Table 601)

R (1) Check fits and clearances at following points.

(a) Check roller B for flats on circumference.

(b) Check points A, B, C, D, F, G for signs of excessive wear.

- R The maximum allowable sideways movement at the forward attachment points is 0.016 in (0.41 mm) each way (Ref. Fig. 601 Detail B).

- If necessary, remove bolts and inspect both bolts and bores for signs of excessive wear. Replace parts worn beyond normal limits. Lubricate pivot points with product No.051.

(c) Check hinge points E and H for signs of excessive play.

- If necessary remove bolts and inspect both bolts and bores for signs of excessive wear. Replace worn parts.

(d) Check end of stop and contact point on end of operating lever for signs of appreciable wear (if an indentation can be felt in this area, the lever must be replaced). Lubricate with product No.051.

(2) Check tail landing gear door operating mechanism (Ref. 32-71-00, Adjustment/Test).

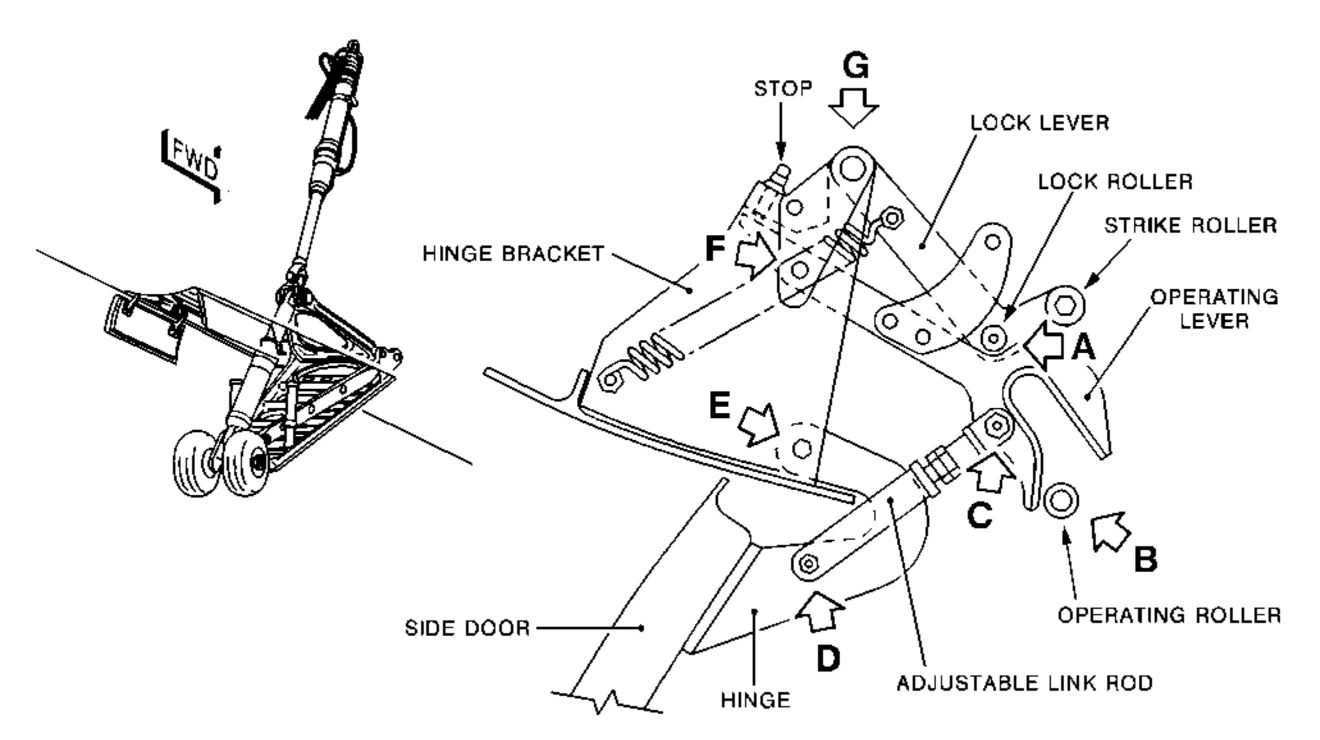
(3) Carry out a tail landing gear retraction and extension (Ref. 32-71-00, Adjustment/Test).

R F. Close-Up

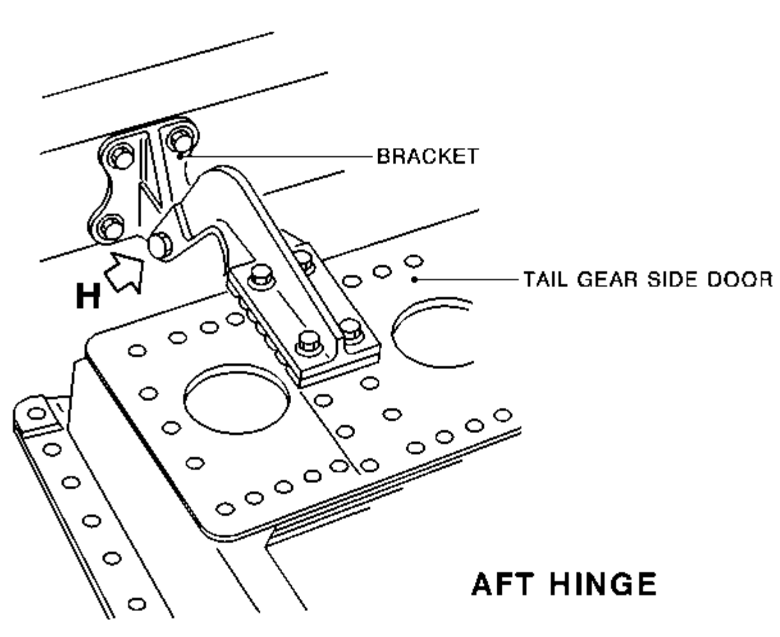
(1) Remove locking sleeve D925406000.

(2) Remove access platform.

(3) Remove safety clips and tags and reset circuit breakers.



FWD HINGE



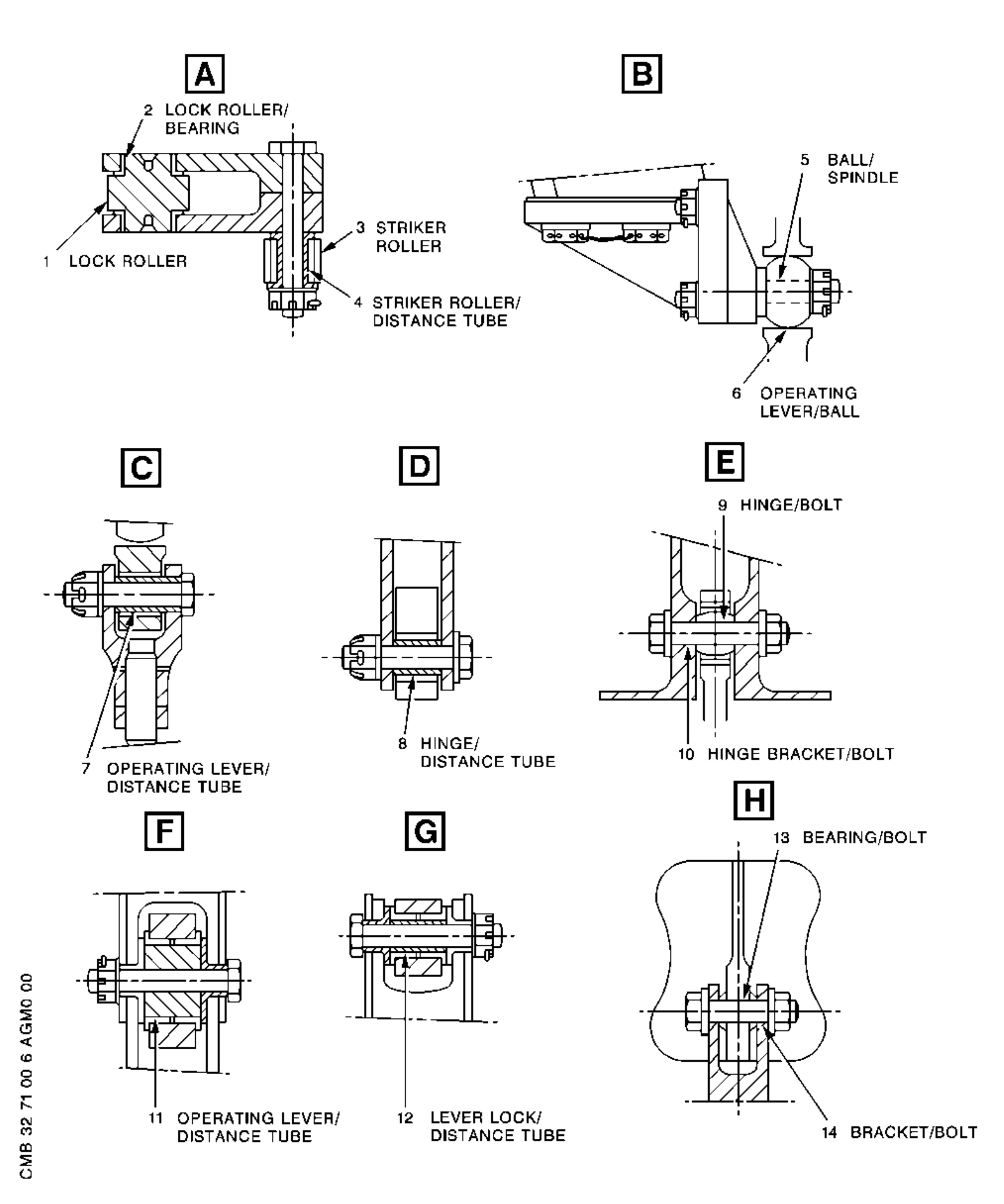
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R

Tail Landing Gear Side Door Operating Mechanism
Figure 603



R Tail Landing Gear Side Door Operating Mechanism
Figure 604

ITEM	Part Name	Dim	Dimension (New Item)	Permissible Worn Dimensions		Clearance (New Item)	Permissible Clearance (Worn Item)
				Non-Selective	Selective		
1	Lock Roller	OD	0.875 to 0.880 (22.225 to 22.352)				
2	Lock Roller	OD	0.4993 to 0.4998 (12.682 to 12.695)			0.0014 (0.036)	
	Bearing	ID	0.5000 to 0.5007 (12.7 to 12.718)			0.0002 (0.005)	
3	Striker Roller	OD	0.6150 to 0.6290 (15.621 to 15.977)				

Dimensions in inches (mm in brackets)

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Fits and Clearances
Tail Gear Door Operating Mechanism
R Table 601 (continued)

ITEM	Part Name	Dim	Dimension (New Item)	Permissible Worn Dimensions		Clearance (New Item)	Permissible Clearance (Worn Item)
				Non-Selective	Selective		
4	Striker Roller	ID	0.3750 to 0.3756 (9.525 to 9.540)	0.3759 (9.547)	0.3762 (9.555)	0.0012 (0.030)	0.0018 (0.0457)
	Distance Tube	OD	0.3744 to 0.3748 (9.51 to 9.52)	0.3741 (9.502)	0.3738 (9.494)	0.0002 (0.005)	
5	Ball	ID	0.3750 to 0.3756 (9.525 to 9.540)	0.3759 (9.547)	0.3762 (9.555)	0.0012 (0.030)	0.0020 (0.0508)
	Spindle	OD	0.3744 to 0.3747 (9.510 to 9.517)	0.3739 (9.497)	0.3736 (9.489)	0.0003 (0.008)	

Dimensions in inches (mm in brackets)

Fits and Clearances
Tail Gear Door Operating Mechanism
R Table 601 (continued)

ITEM	Part Name	Dim	Dimension (New Item)	Permissible Worn Dimensions		Clearance (New Item)	Permissible Clearance (Worn Item)
				Non-Selective	Selective		
6	Operating Lever	ID	0.7900 to 0.8000 (20.066 to 20.320)	0.8080 (20.523)		0.0213 (0.541)	0.0293 (0.7442)
	Ball	OD	0.7787 to 0.7792 (19.779 to 19.791)			0.0108 (0.275)	
7	Operating Lever	ID	0.3750 to 0.3756 (9.525 to 9.540)			0.0012 (0.031)	
	Distance Tube	OD	0.3744 to 0.3748 (9.509 to 9.520)			0.0002 (0.005)	

Dimensions in inches (mm in brackets)

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Fits and Clearances
Tail Gear Door Operating Mechanism
R Table 601 (continued)

ITEM	Part Name	Dim	Dimension (New Item)	Permissible Worn Dimensions		Clearance (New Item)	Permissible Clearance (Worn Item)
				Non-Selective	Selective		
8	Hinge	ID	0.3750 to 0.3756 (9.525 to 9.540)			0.0012 (0.030)	
	Distance Tube	OD	0.3744 to 0.3748 (9.509 to 9.520			0.0002 (0.005)	
9	Hinge	ID	0.2495 to 0.2500 (6.337 to 6.350)			0.0010 (0.025)	
	Bolt	OD	0.2490 to 0.2495 (6.325 to 6.337)			0.0000	

Dimensions in inches (mm in brackets)

Fits and Clearances
Tail Gear Door Operating Mechanism
R Table 601 (continued)

ITEM	Part Name	Dim	Dimension (New Item)	Permissible Worn Dimensions		Clearance (New Item)	Permissible Clearance (Worn Item)
				Non-Selective	Selective		
10	Hinge Bracket	ID	0.2500 to 0.2509 (6.350 to 6.373)			0.0019 (0.048)	
	Bolt	OD	0.2490 to 0.2495 (6.325 to 6.337)			0.0005 (0.013)	

Dimensions in inches (mm in brackets)

R Fits and Clearances
Tail Gear Door Operating Mechanism
Table 601 (continued)

ITEM	Part Name	Dim	Dimension (New Item)	Permissible Worn Dimensions		Clearance (New Item)	Permissible Clearance (Worn Item)
				Non-Selective	Selective		
11	Operating Lever	ID	0.7500 to 0.7508 (19.050 to 19.070)			0.0016 (0.040)	
	Distance Tube	OD	0.7492 to 0.7497 (19.030 to 19.042)			0.0003 (0.008)	
12	Lever Lock	ID	0.3750 to 0.3756 (9.525 to 9.540)			0.0012 (0.030)	
	Distance Tube	OD	0.3744 to 0.3748 (9.509 to 9.520)			0.0002 (0.005)	

Dimensions in inches (mm in brackets)

Fits and Clearances
Tail Gear Door Operating Mechanism
R Table 601 (continued)

ITEM	Part Name	Dim	Dimension (New Item)	Permissible Worn Dimensions		Clearance (New Item)	Permissible Clearance (Worn Item)
				Non-Selective	Selective		
13	Bearing	ID	0.2495 to 0.2500 (6.337 to 6.350)			0.0010 (0.025)	
	Bolt	OD	0.2490 to 0.2495 (6.325 to 6.337)			0.0000	
14	Bracket	ID	0.2500 to 0.2509 (6.350 to 6.373)			0.0019 (0.048)	
	Bolt	OD	0.2490 to 0.2495 (6.325 to 6.337)			0.0005 (0.013)	

Dimensions in inches (mm in brackets)

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Fits and Clearances
Tail Gear Door Operating Mechanism
R Table 601 (concluded)

TAIL GEAR LEG DOOR - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The tail gear leg door is attached to the structure by two hinge fittings and to the tail gear by two spring rods.

2. Tail Gear Leg Door

A. Equipment and Materials

	DESCRIPTION	PART NO.
	Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
**ON A/C ALL		
B	Test Set - Tail Landing Gear	D921593000 or
B		2-32-0042-1BA
**ON A/C ALL		
	Circuit Breaker Safety Clips	
	Access Platform 4.060 m (13 ft. 7 in.)	
	Locking Sleeve Tail Landing Gear Jack	D925406000
	Lockwire - Dia. 0.016 in. (0.4 mm) Corrosion Resistant Steel	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position. Prohibit operation by displaying warning notice.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform.

(5) Position locking sleeve D925406000.

(6) Open access door 314AR.

(7) Pass test set D921593000 harness leads through the door and connect to the aircraft microswitch wiring plug and to the tail gear selector (G28) socket.

(8) Connect test set D921593000 to a 28 VDC electrical supply.

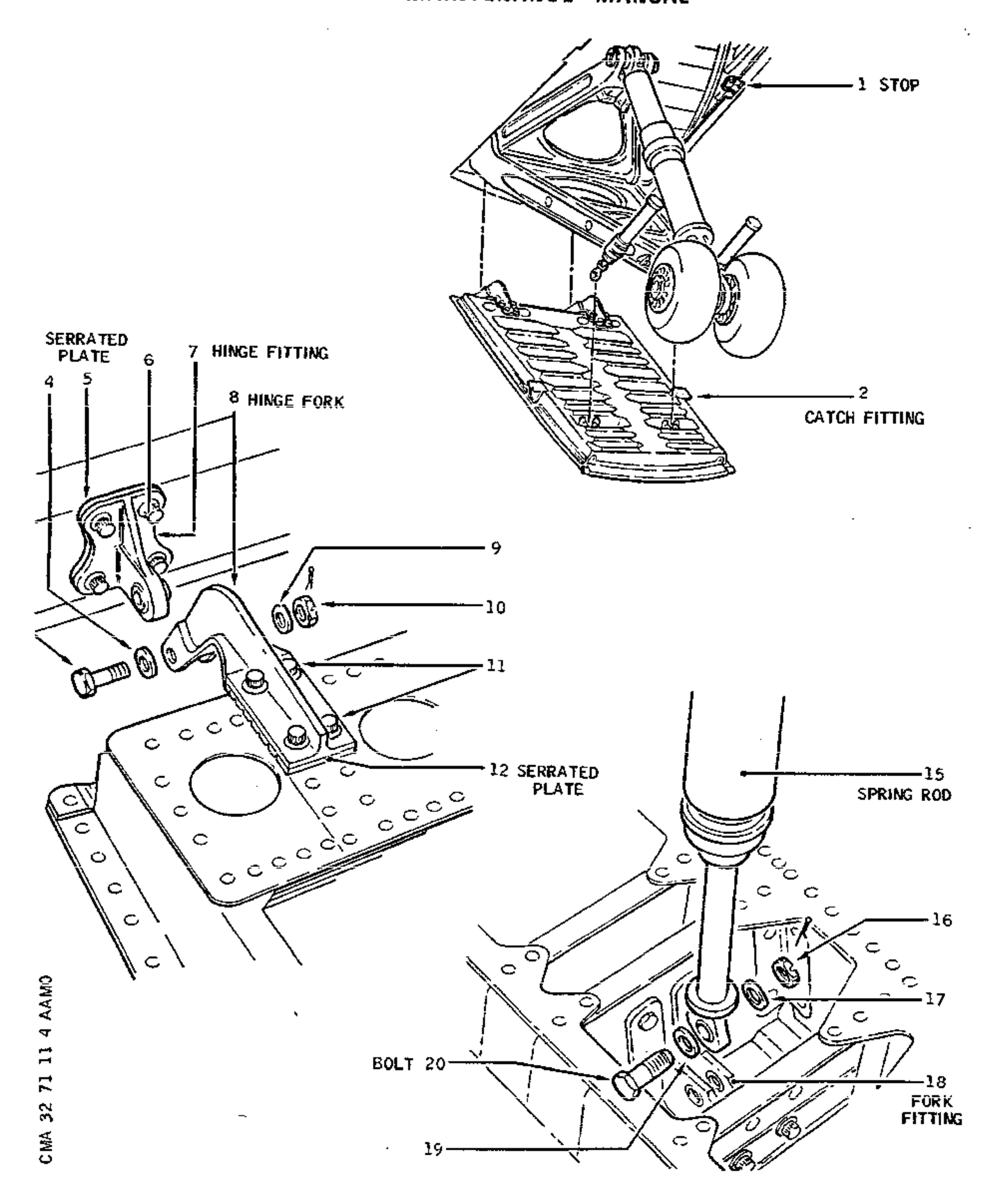
NOTE : Make certain that the 3-position switch on the test set is in NEUTRE (neutral) position, and the supply switch is in ARRET (off) position.

(9) Connect hydraulic power unit to Green system. (Ref. 29-11-00, Servicing).

C. Remove

(1) Remove cotter pin and nut (10) from both hinges on the door. Retain washer (9).

(2) Disconnect each of the two spring rods (15) from their attachment on the door.
Remove nut (16), support the door, remove bolt (20) and washers (17) and (19).



Tail Gear Leg Door
Figure 401

(3) Remove bolts (3), retain washers (4) and remove door.

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Position door fork hinges (8) on their respective fittings.

(2) Introduce bolt (3) fitted with washer (4) into each of the two hinges. Install washer (9) tighten nut (10) and safety with cotter pin.

WARNING : KEEP THE REPLACEMENT DOOR IN OPEN POSITION.

(3) Remove equipment D925406000.

(4) Pressurize Green hydraulic system (at minimum pressure and delivery rate) (Ref. 29-11-00, Servicing).

(5) Energize equipment D921593000.

(6) Slowly retract tail gear using equipment D921593000.

(7) Depressurize Green hydraulic system before closing side doors (Ref. 29-11-00, Servicing).

(8) Switch off electrical supply to equipment D921593000.

(9) Close replacement door manually, making certain that catch fitting (2) is in contact with stop (1).

(10) Check that there is a clearance of between 0.070 and 0.110 in. (1.80 and 2.80 mm) around the door.

(11) If necessary adjust the clearance around the door to obtain a flush fitting, by moving the fork hinges (8) along the serrated plate (12), after having cut the lockwire and loosened screws (11).
Tighten screws (11) then safety with lockwire.

(12) Check door into wind and out-of-wind setting. Into wind, out-of-wind limits :± 0.059 in. (± 1.50 mm).

(13) If necessary adjust into wind, out-of-wind setting at fork hinge (8) side. Cut lockwire and loosen screws (6). Adjust by moving hinge fittings (7) on serrated plate (5). After adjustment tighten screws (6) and safety with lockwire.

(14) If necessary adjust into wind, out-of-wind setting on either side of spring rods (15). Cut lockwire and loosen stop (1) attach screws. Adjust by moving stops (1) on their mountings. After adjustment tighten attach screws and safety with lockwire.

(15) Pressurize Green hydraulic system (at minimum pressure and delivery rate) (Ref. 29-11-00, Servicing).

(16) Extend tail gear slowly, using equipment D921593000.

(17) Depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(18) Switch off electrical supply to equipment D921593000.

(19) Connect each spring rod (15) to corresponding fork fitting (18), insert bolt (20) fitted with washers (19 and 17). Tighten nut (16) and safety with cotter pin.

F. Test

Not applicable.

G. Close-Up

(1) Disconnect hydraulic power unit.

(2) Disconnect test set D921593000 leads.

(3) Connect microswitch aircraft wiring plug, and tail gear selector plug.

(4) Remove safety clips and tags and reset circuit breakers.

(5) Close access door.

(6) Remove access platform.

(7) Remove warning notice from flight compartment.

SIDE DOORS - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR.

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Two side doors, hinged on the structure restore fuselage streamlining when the tail landing gear is retracted. As both doors are identical only one removal is described in this topic.

2. Side Doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Ground Power Unit - Hydraulic - Power and Preliminary Testing	EMH398E
**ON A/C ALL	
B Test Set Tail Landing Gear	D921593000 or
B	2-32-0042-1BA
**ON A/C ALL	
Circuit Breaker Safety Clips	
Access Platform 4.060 (13 ft. 7 in.)	
Locking Sleeve - Tail Gear Jack	D925406000
Lockwire - Dia. 0.7 mm (0.028 in.) Corrosion Resistant Steel	

DESCRIPTION	PART NO.
Special Materials (Ref. 20-30-00, No.111)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position. Display warning notice in flight compartment prohibiting operation of landing gear Normal control lever.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC POSN IND	1-213	G 51	N16
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Install access platform.

(5) Install tail gear jack locking sleeve D925406000.

(6) Open access door 314AR.

(7) Connect tail landing gear test set D921593000 harness leads to microswitch connector on aircraft and to tail gear (G28) selector socket, by routing harness complete through access door 314AR.

(8) Connect test set D921593000 to 28 VDC electrical supply.

NOTE : Make certain that the 3-position switch on test set is in NEUTRE (neutral) position, and the supply switch is in ARRET (off) position.

(9) Connect hydraulic power unit to Green hydraulic system.

C. Remove

(1) Disconnect link rod (15) from forward hinge fitting (8) :
remove cotter pin and nut (14), remove bolt (6) retain washers (7) (13) for reinstallation.

(2) Remove spacers (9) from forward hinge fitting (8).

(3) Remove cotter pins and nuts (1) from each of the two hinges. Remove bolt (4) retain washers (2) and (3) for reinstallation. Remove door.

WARNING : DOOR SHALL NOT HANG FROM ONE HINGE ONLY.

D. Preparation of Replacement Component

Not applicable.

E. Install

(1) Position door hinge fittings in their respective fork fittings.

(2) Install bolt (4) fitted with washer (3) into each of the two hinge fittings. Install washer (2) tighten nut (1) and safety with cotter pin.

(3) Remove locking sleeve D925406000.

WARNING : KEEP THE REPLACEMENT DOOR IN OPEN POSITION.

(4) Pressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(5) Slowly retract tail gear using test set D921593000.

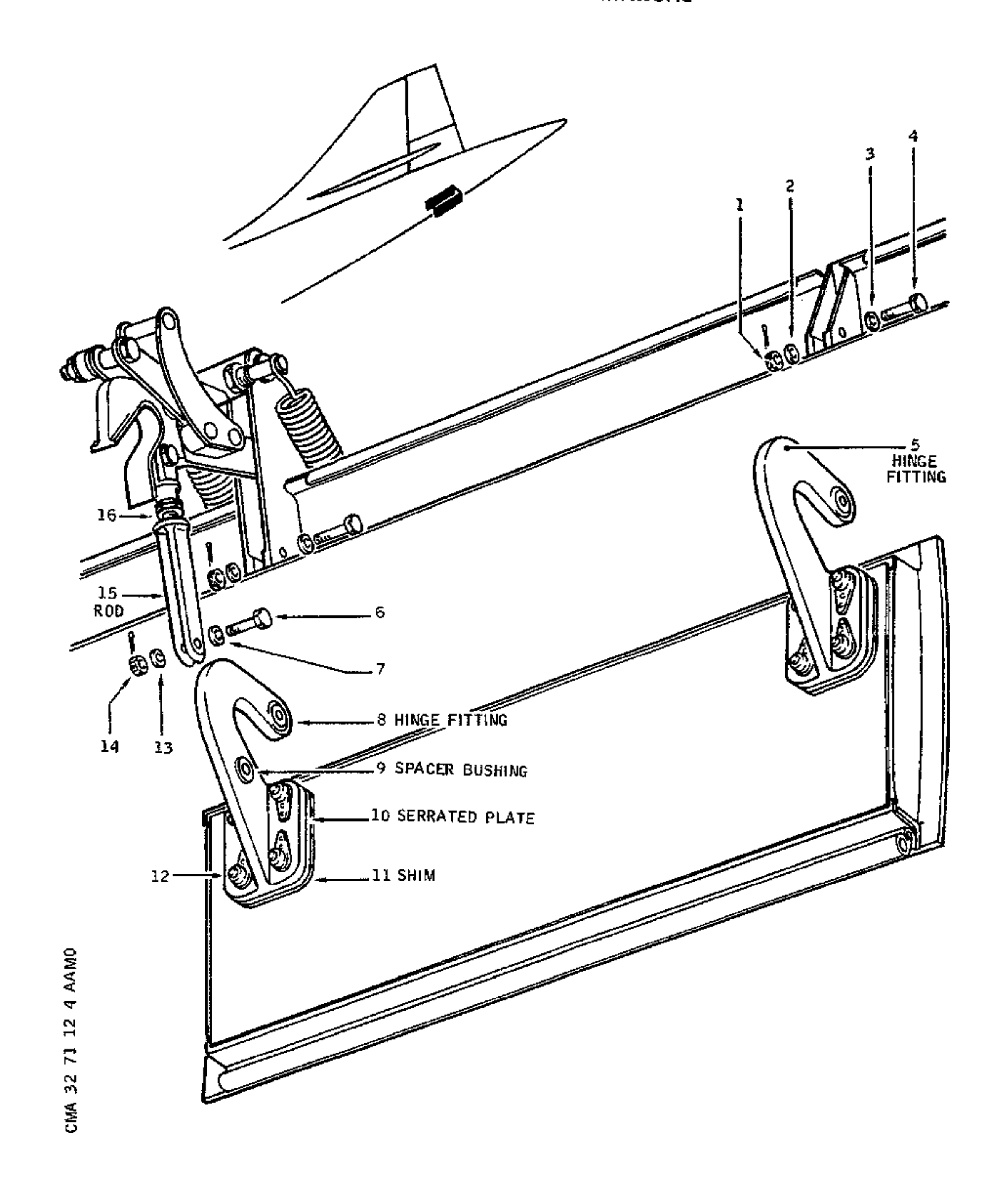
(6) With tail gear uplocked, depressurize Green hydraulic system (Ref. 29-11-00, Servicing).

(7) Switch off electrical supply to test set D921593000.

(8) Close replacement door manually.

(9) Check that there is a clearance of between 0.070 and 0.110 in. (1.80 to 2.80 mm) around the door.

(10) If necessary, this clearance can be adjusted by displacing hinge fittings (5) and (8) on serrated plates (10) after removing product No.111 and loosening screws (12).



Side Door
Figure 401

(11) Check door into wind and out-of-wind setting.
Into wind, out-of-wind limits : ± 0.059 in. (1.50 mm).

(12) If necessary, adjust door into wind, out-of-wind setting by adding or removing shims (11).

(13) Tighten screws (12). Cover end of screws with product No.111.

(14) Open door.

(15) Disconnect link rod from door which has not been removed.

**ON A/C 001-005,

(16) Close the replacement door.

(a) Install spacer (9) in bore of forward hinge fitting (8).

(b) Connect link rod (15) to forward hinge fitting (8).

(c) Install bolt (6) and hand tighten nut (14).

(d) If necessary adjust into-wind, out-of-wind setting.
Cut lockwire and loosen nut (16). Adjust overall length of link rod (15).

(e) Tighten nut (16) and safety with lockwire.

After SB 32-047 For A/C 001-005,

(16) Close the replacement door.

(a) Install spacer (9) in bore of forward hinge fitting (8).

(b) Connect link rod (15) to forward hinge fitting (8) with bolt (6) and nut (14). Hand tighten nut (14).

(c) Check door into-wind, out-of-wind setting. If setting is out of tolerance, adjust length of link rod (15) as follows :

(c1) Disconnect link rod (15).

(c2) Cut lockwire, loosen nut (16) and turn rod fork end-fitting to achieve required length.

(c3) Tighten nut (16). Torque to between 160 and 180 lbf. in. (1.80 and 2.03 m.daN). Safety nut (16) with lockwire (Ref. 20-21-13).

NOTE : Make certain that link rod thread is visible through witness hole in fork end-fitting.

(17) Disconnect link rod by removing nut (14) and bolt (6).

WARNING : KEEP DOORS IN OPEN POSITION.

(18) Pressurize Green system (at minimum pressure and delivery rate). (Ref. 29-11-00, Servicing).

(19) Extend tail gear slowly, using test set D921593000.

(20) Depressurize Green system (Ref. 29-11-00, Servicing).

(21) Switch off electrical supply to test set D921593000.

(22) Make certain that spacer bushings (9) are in place.

(23) Connect rod links (15) and to each insert bolt (6) fitted with washer (7).
Install washer (13) tighten nut (14) and safety with cotter pin.

F. Test

Not applicable.

G. Close-Up

(1) Disconnect hydraulic power unit.

(2) Disconnect test set D921593000 leads.

(3) Connect microswitch aircraft wiring plug and tail gear selector plug.

(4) Remove safety clips and tags and reset circuit breakers.

(5) Close access door.

(6) Remove access platform.

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(7) Remove warning notice from flight compartment.

SIDE DOORS - INSPECTION/CHECK

WARNING: CHECK THAT LANDING GEAR GROUND SAFETY DEVICES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. General

This check is included to determine the amount of backlash in the side doors caused by wear in mechanism.

2. Side Doors

A. Equipment and Materials

DESCRIPTION	PART NO.
Locking Sleeve - Tail Landing Gear Jack	D925406000
Access Platform 4.060 m (13 ft.7 in)	
Circuit Breaker Safety Clips	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that the landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers:

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform.

(5) Install locking sleeve D925406000.

(6) Refer to 32-71-00. Carry out procedures that are applicable and observe all safety precautions.

C. Check

CAUTION: WHEN THE TAIL GEAR IS "DOWN" THE DOORS MUST BE LEFT IN THE "OPEN" POSITION.

RB WHEN REPLACING ITEMS ENSURE THAT PARTS REPLACED
RB ARE TO THE APPROPRIATE MOD STANDARD.

(1) Carry out normal visual inspection of mechanism and side door forward and aft hinge assemblies.
Visually examine attachment structure adjacent to the
RB forward and aft hinge bracket paying particular
RB attention to stringer cleat connections, stringers
RB and fasteners.

(2) Examine for excessive wear all the points referred to
RB in Fig. 601, items 1 to 10 paying particular attention
RB to:-

(a) Examine roller item (1) for flats on circumference and wear at pivot.

(b) Examine points (2), (3), (4), (5), (6), (7) and (8) for signs of backlash. Note points where backlash is evident.

(c) Examine aft hinge pivots (8) for signs of wear by applying a vertical load to the side door, movement in excess of 0.010 in requires breakdown of joint.

RB (d) Remove the two springs that restrain the lock
RB lever and examine for wear. Examine spring
attachment bars for wear at the rebate where springs locate.

RB (e) Prior to refitting the two springs, manipulate
RB the locking lever to ensure free movement about
RB the axis point (7). Ensure that this joint is
RB lubricated (Ref. Para (2) (h)). It is vital that
RB this joint provides free movement within wear
RB allowables (Ref. 32-71-00 Fig. 604 and 613
RB Detail G). Refit the springs.

(f) Examine operating roller (1) and mounting
RB brackets for any sign of wear and looseness on
tail gear door.

(g) Examine catcher assembly for wear. Ensure that lock lever cannot become trapped over "Dead Centre" with respect to hinge bracket.

B (h) Lubricate items (1), (2), (3), (4), (5), (6),
B (7), (8) and (10) (Ref. Fig. 601) using "Never
B Seez" NSN - 16A grease (Code NFLA 6170).

RB NOTE: NSBT8N grease can be used instead of NSN -
RB 16A grease.

(3) Check the backlash of each door in turn. Measure the backlash at the door edge adjacent to the door operating mechanism.

(a) Rotate the LH door towards the centre line of the aircraft and hold in position.

(b) Using the LH door as stationary reference point hook the end of a steel measuring tape onto the edge of the LH door and pulling it tight, hold it horizontally resting it against the corresponding edge of the RH door. Move the RH door inboard and outboard using a load of 3 to 4 lbf (1.36 to 1-81 kg). Measure and record the total backlash.

(c) Re-locate the tape as above on the RH door and check the backlash of the LH door.

NOTE: The backlash of a new mechanism and door should be within 0.19 to 0.26 in (4.826 to 6.604 mm). This dimension was estimated prior to manufacture and is given as a guide only.

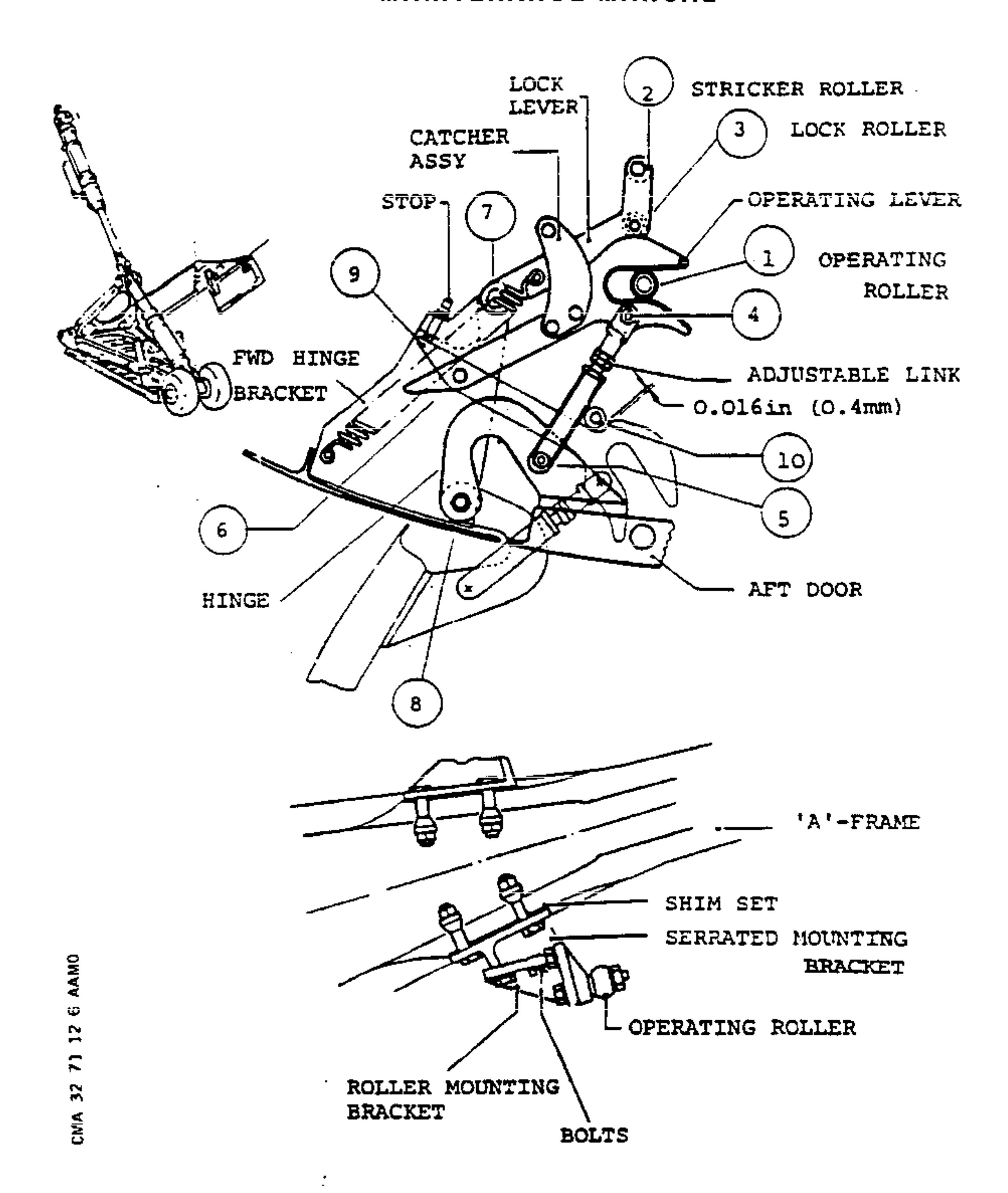
(d) Record backlash for the LH door and RH door.

(4) If the backlash recorded in para (3) above is greater than 0.50 in, advise BA Development then extend the check to look for signs of excessive backlash at the locations defined in para (2) (b) above.

If necessary remove bolt and examine both bolt and bores for signs of excesive wear. Replace worn parts that are greater than normal wear limits. At points (4), (5) and (8) torque load bolt/nut to 25 to 30 lbf in (0.283 to 0.339 mdaN) and secure with split pins.

NOTE: Prior to fitting at BAC Mod V1090/001 points (4) and (5) showed signs of excessive wear and the other points, less wear.

Re-lubricate with "Never Seez" NSN - 16A grease (Code NFLA 6170).



Side Doors - Inspection/Check
Figure 601

(5) Check the clearance between the operating lever and operating roller (10) with the doors fully open and record. Examine the end of operating lever (9) for indentation and the end of stop screw for signs of excessive wear. If the clearance measured at check
B above is greater than 0.024 in readjust stop screw
B to obtain a minimum clearance of 0.016 in.
Re-lubricate where necessary with "Never Seez" NSN - 16A Grease (Code NFLA 6170). Record clearance at left hand door and right hand door prior to adjustment.

RB Check the stop screw should be adjusted to give a gap
RB of 0.004/0.006 in to the operating lever.

RB Check the side play of the 'A' frame is limited to
RB 0.032 in.

(6) If the rigging of the door operating mechanism has been disturbed by the fitting of new parts it will be necessary to re-rig the mechanism in accordance with MM 32-71-00 Adjustment/Test Section.

(7) Check that the loops at either end of the springs fit correctly and that the springs are not slack with the doors locked open.

RB (8) When fully rigged and adjusted check the locking of
RB each door individually by allowing it to open and lock
RB under the spring load in order to confirm adjustment
RB of the mechanism.

D. Close-Up

RB CAUTION: WHEN THE TAIL GEAR IS "DOWN" THE DOORS MUST
RB BE LEFT IN THE "OPEN" POSITION.

(1) Remove locking sleeve D925406000.

(2) Remove access platform.

(3) Remove safety clips and tags and reset circuit breakers tripped in paragraph B.

SPRING ROD - REMOVAL/INSTALLATION

1. General

The spring rods serve to hold the leg door against the aircraft structure when the tail gear is retracted.
The spring rods are located either side of the rocker beam.

2. Spring Rod

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 4.060 m (13 ft. 7 in.)	

B. Prepare

Not applicable

C. Remove (Ref. Fig. 401)

NOTE : To remove one spring rod it is necessary to disconnect both spring rods at their attachments on leg door.

(1) Disconnect spring rod at its attach point on leg door.

Remove cotter pin, remove nut (5), retain washer (6) for reinstallation and remove pin (8) and washer (7).

(2) Disconnect spring rod at its attach point on rocker beam.

CAUTION : SUPPORT DOOR TO AVOID DAMAGE TO AIRCRAFT STRUCTURE.

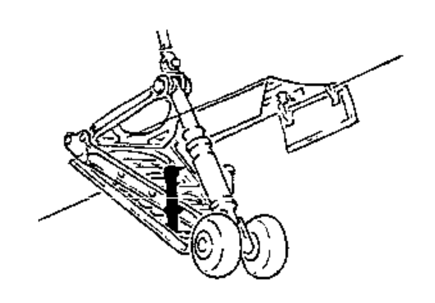
Remove cotter pin, remove nut (1), retain washer (2) for reinstallation and remove pin (4) and washer (3).

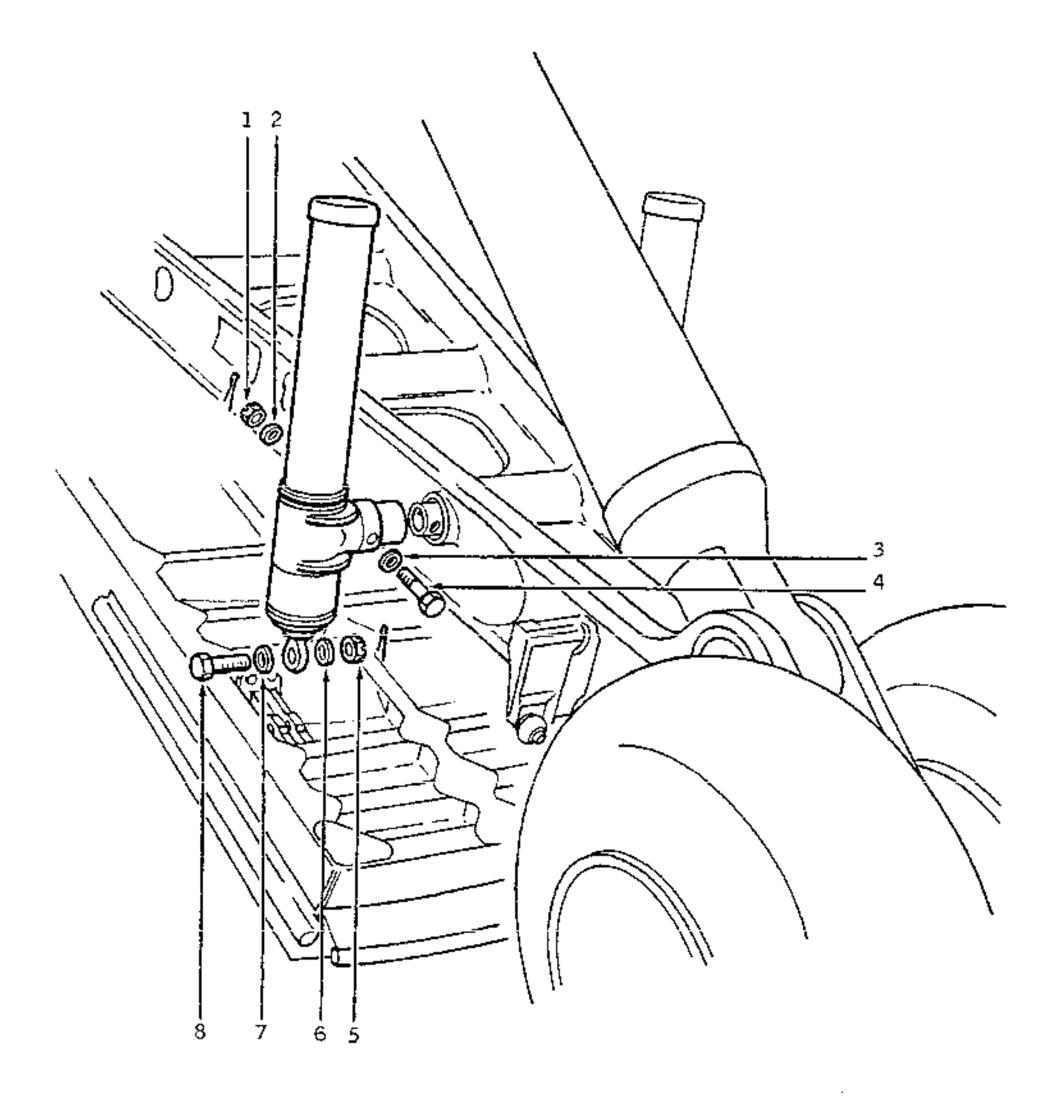
Remove spring rod.

D. Preparation of Replacement Component

Not applicable

E. Install





CMA 32 71 13 4 AAM0

Spring Rod
Figure 401

Treat spring rod/rocker beam contact surfaces with sealant (Ref. 20-22-13).

(1) Connect spring rod at its attach point on rocker beam.

Install pin (4) with washer (3) under head. Install washer (2) and nut (1).
Tighten nut (1) and safety with a cotter pin.

(2) Connect spring rod at its attach point on leg door.

CAUTION : POSITION OTHER SPRING ROD END FITTING IN FORK FITTING ON LEG DOOR.

Position spring rod end fitting in fork fitting on leg door.
Install pin (8) with washer (7) under head.
Install washer (6) and nut (5).
Tighten nut (5) and safety with a cotter pin.

(3) Connect other spring rod end fitting to fork fitting on leg door.

F. Test

Not applicable

G. Close-Up

(1) Make certain that working area is clean and clear of tools and miscellaenous items of equipment.

WARNING : MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

Shock absorber charging

2. Shock Absorber

A. Equipment and Materials

DESCRIPTION	PART NO.
Circuit Breaker Safety Clips	
Access Platform 4.060 m (13 ft. 7 in.)	
Air/Hydraulic Tool Kit	
Locking Sleeve - Tail gear jack	D925406000
R Nitrogen Source with Pressure Regulator R Capable of Supplying a 1460 psi (100 bars) pressure	
Thermometer	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER OUT		G 4	A 9

(3) Position access platform.

(4) Install tool D925406000.

R (5) Make out a charging system with components contained in the air/hydraulic tool kit.

R NOTE : Charging system component identification cor-
R responds with identification given in the air/hydraulic tool kit.

C. Charging (Ref. Fig.301 and 302)

NOTE : If shock absorber has just been operating, wait half
R an hour at least before carrying out a charging procedure.

R (1) With charging valve cap removed, connect system previously set out to charging valve.

(2) On control valve (12), close valves (a) and (b) and remove bleed valve cap.

R (3) Adjust nitrogen source pressure to value given on the graph as a function of ambient temperature.

R (4) Rotate valve control nut a maximum of one turn and a half.

R WARNING : HOLD VALVE BODY WITH WRENCH WHILE ROTATING
R VALVE CONTROL NUT.

(5) Open valve (a) of control valve (12) very slowly and
R monitor pressure on pressure gauge. Wait one or two mi-
R nutes until pressure is stabilized.

R (6) If pressure is too high, close valve (a) and slowly open valve (b) to obtain correct pressure value. If
R pressure is too low, act on nitrogen source pressure
R regulator to obtain the desired pressure.

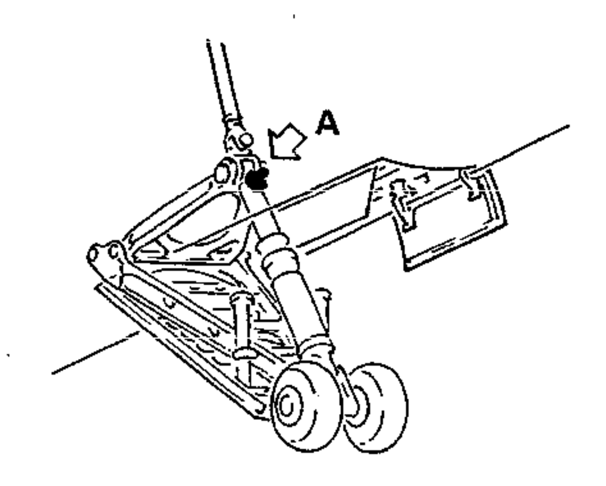
R (7) Tighten valve control nut and torque to between 44 and
R 75 lbf.in. (0.5 and 0.85 m.daN).

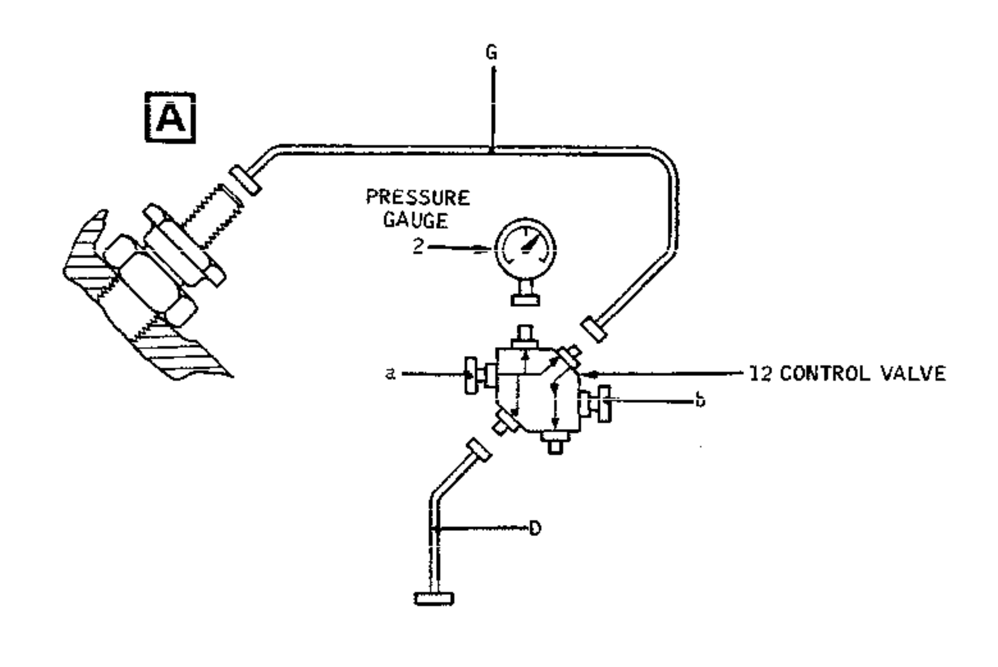
(8) Shut down nitrogen supply and open valve (b) of valve
R (12) to relieve pressure in the system.

R (9) Disconnect the charging system and tighten valve cap.

D. Close-Up

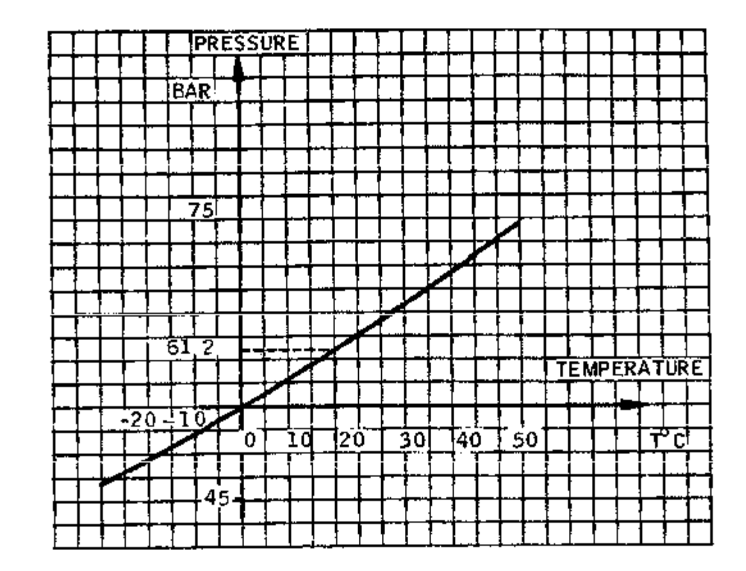
(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment. Make cer-

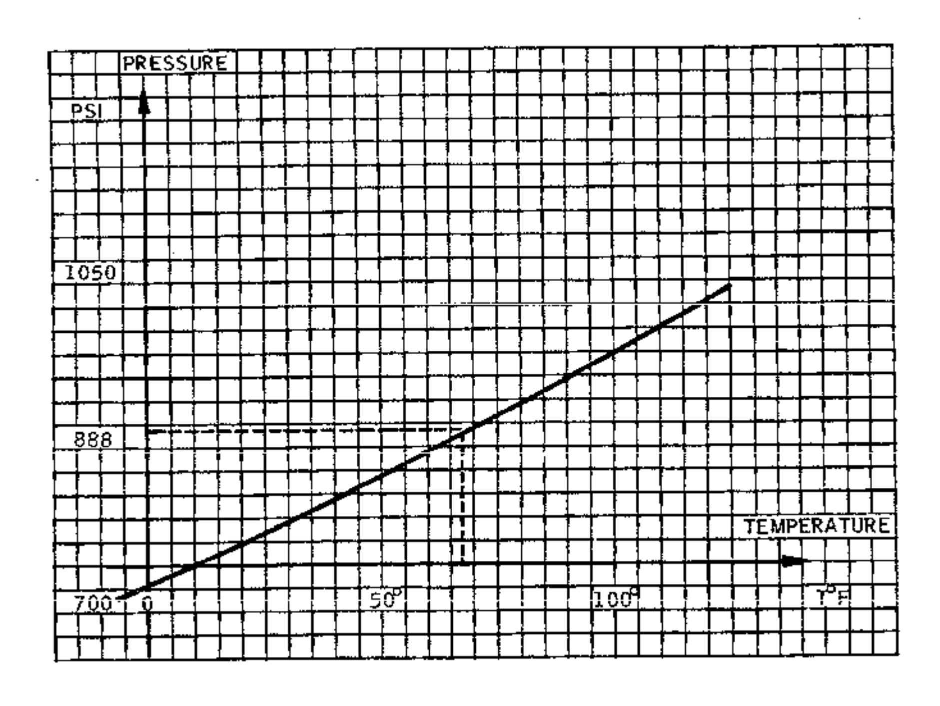




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Shock Absorber Charging
Figure 301





CMA 3271 24 3 ACM0

Shock Absorber - Charging Graph
Figure 302

tain that no trace of hydraulic fluid remains.

(2) Remove tool D925406000.

(3) Remove access platform.

(4) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

SHOCK ABSORBER - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT THE LANDING GEAR POSITION INDICATED ON THE GEARS POSITION INDICATING UNIT CORRESPONDS WITH THE ACTUAL POSITION OF THE LANDING GEAR

BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

The shock absorber is of the oleo-pneumatic type. Shock absorber pressure must be released prior to removal.

2. Shock Absorber

A. Equipment and Materials

DESCRIPTION	PART NO.
Guide Cone and Backing Tool	C47320
Extractor	C47737
Installation and Extraction Cone	C47164
Guide Cone	C47163
Maintaining Wrench	C47009
Extractor	C47008
Blanking Plate	C46988
Adapter	C46986
Sling - Tail Gear and Jack	D935174002
Locking Sleeve - Tail Gear Jack	D925406000
Access Platform 4.060 m (13 ft. 7 in.)	

DESCRIPTION	PART NO.
Safety Clips	
Common Greases (Ref. 20-30-00, No.051)	
Cleaning (Ref. 20-30-00, No.468)	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

(2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position.

(3) Trip, safety and tag the following circuit breakers :

SERVICE	PANEL	CIRCUIT BREAKER	MAP REF.
UC RAISE DOORS CLOSE SUP	15-215	G 1	A 6
UC SELECTOR RAISE CONT		G 2	A 7
UC LOWER DOORS OPEN SUP		G 3	A 8
UC SELECTOR LOWER CONT		G 4	A 9

(4) Position access platform.

(5) Install locking sleeve D923406000 on tail gear.

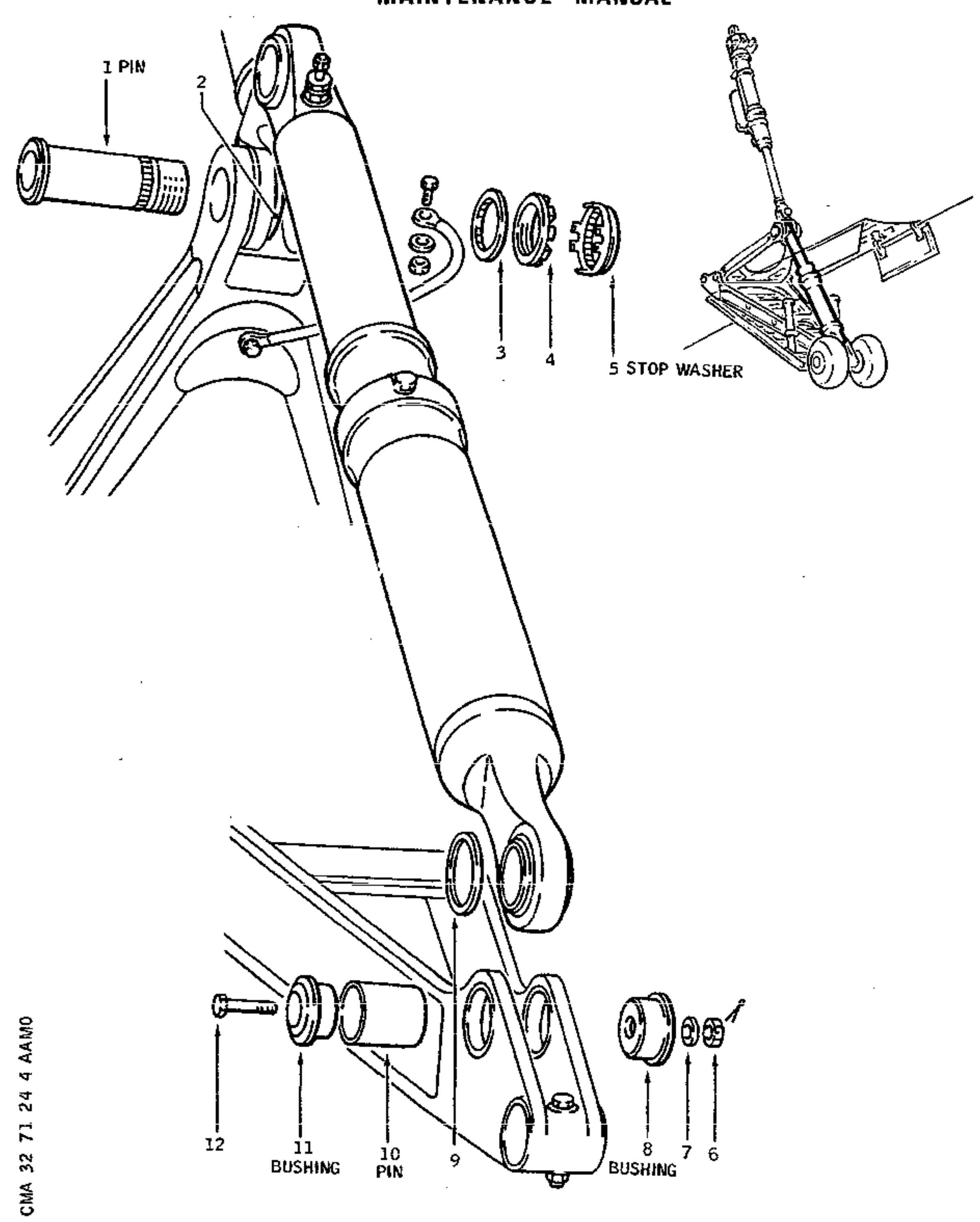
(6) Remove valve cap, rotate valve control nut to a maximum of one turn and a half. Release shock absorber pressure.

WARNING : HOLD VALVE BODY WITH WRENCH WHILE ROTATING VALVE CONTROL NUT.

(7) Hold tail gear/shock absorber assembly by means of sling D935174002 during shock absorber removal/installation procedures.

(8) Remove wheels (Ref. 12-37-00).

C. Remove



Shock Absorber
Figure 401

(1) Disconnect bonding strip from attach point on shock absorber.

(2) Disconnect shock absorber from upper attach fitting.

(a) Install tool C47320 in bore of connecting pin (1) (on nut side), remove stop washer (5) using extractor C47008.

(b) Using tool C46986, remove nut (4) while holding pin (1) by means of wrench C47009. Remove washer (3).

(c) Remove connecting pin (1) by means of extractor C47737, hold shock absorber connected to universal joint by means of guide cone C47163.

(3) Disconnect shock absorber from lower attach fitting.

(a) Remove cotter pin, remove castellated nut (6). Retain washer (7) and remove setting pin (12).

(b) Remove bushings (8) and (11).

(c) Remove attach pin (10) by means of equipment C47164. Retain washer (9).

(4) Remove guide cone C47163 and remove shock absorber while holding shock absorber attached at the upper part.

(5) Clean items using Product No.468.

D. Preparation of Replacement Component

E. Install

(1) Connect shock absorber to upper attach fitting.

(a) Coat pin (1) with Product No.051.

(b) Offer up the ball-end fitting of shock absorber accomodating the charging valve in the clevis of strut upper attach fitting.

NOTE : Position shock absorber correctly with charging valve upwards.

(c) Check that washer (2) is cemented and in contact with universal joint clevis.

(d) Align all bores and insert pin (1) fitted with guide cone C47163. When pin (1) is installed, remove equipment C47163.

(e) Hold pin (1) using wrench C47009 and fully engage washer (3) using equipment C46988.

(f) Tighten nut (4) using tool C46986 and proceed with several tightenings to achieve correct compression of all items.

(g) Back-off nut (4) then screw in to achieve contact only.
From this position, torque nut (4) to 13 (+ 2, - 0) m.daN (96 (+ 15, - 0) lbf.ft.).

(h) Position stop washer (5), install on nut (4) by means of a mallet and equipment C46988.

(2) Connect shock absorber to lower attach fitting

(a) Slightly coat pin (10) with Product No.051.

(b) Align rocking arm and shock absorber bores and place washer (9) (flat bearing on clevis), insert pin (10) fitted with equipment C47164. When pin (10) is installed, remove equipment C47164.

(c) Install bushings (8) and (11) and insert setting pin (12).

(d) Install washer (7) and tighten nut (6). Fully tighten nut (6) to achieve correct compression of all items.
Loosen nut (6) and rotate to achieve contact only. From this position, torque nut (6) to 4 (+ 1, - 0) m.daN (30 (+ 7, - 0) lbf.ft.).
If necessary, modify the position obtained in order to install cotter pin.

(3) Connect bonding strip to the relevant attach point on shock absorber.

F. Tests

Not applicable

G. Close-Up

(1) Remove sling D935174000.

(2) Install wheels (Ref. 12-37-00).

(3) Charge shock absorber (Ref. 32-71-24, Servicing).

(4) Remove locking sleeve D925406000.

(5) Remove access platform.

(6) Remove safety clips and tags and reset the circuit breakers tripped in paragraph B.

SHOCK ABSORBER - INSPECTION/CHECK

WARNING : BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.

MAKE CERTAIN THAT LANDING GEAR AND SHORTENING MECHANISM SAFETY DEVICES ARE IN POSITION.

1. General

R Inspection of shock absorber charging system

R 2. Shock Absorber

A. Equipment and Materials

DESCRIPTION	PART NO.
Access Platform 4.060 m (13 ft.7 in.)	
Air/Hydraulic Tool Kit	
Locking Sleeve - Tail Gear Jack	D925406000
Thermometer	

B. Prepare

(1) Take the precautions described in the previous WARNING paragraph.

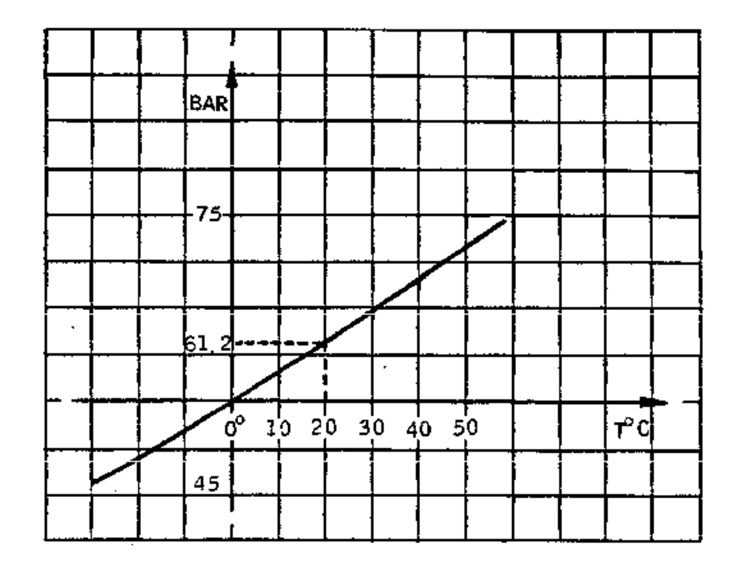
R (2) On First Officer's instrument panel, make certain that landing gear Normal control lever is in NEUTRAL position

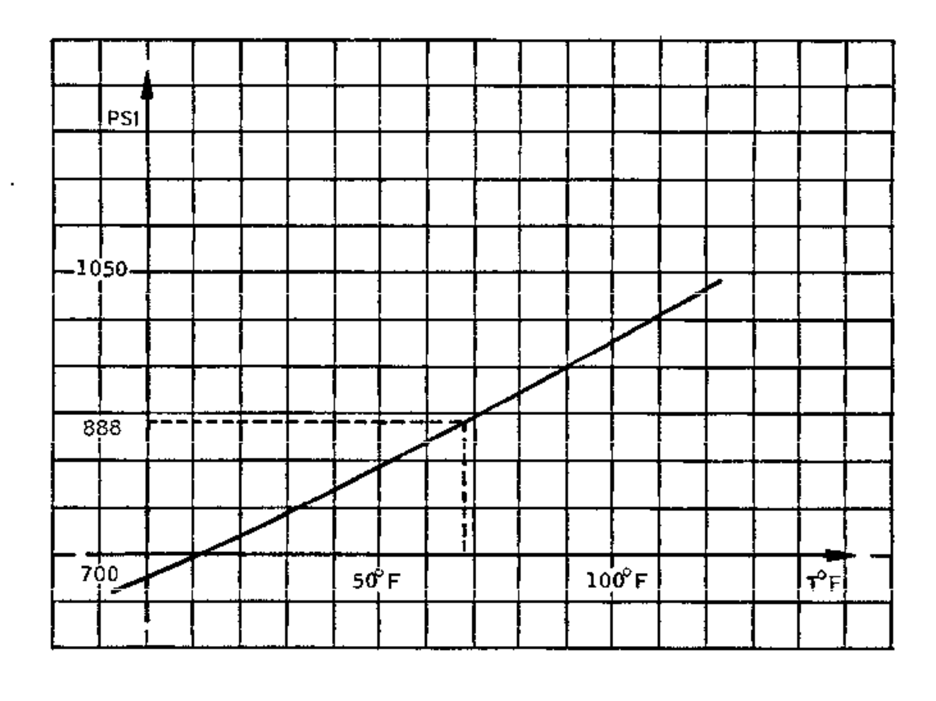
(3) Position access platform.

R (4) Install locking sleeve D925406000.

C. Checks

R NOTE : If shock absorber has just been operating, wait at least half an hour before carrying out pressure





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Pressure/Temperature Graph
Figure 601

checks.

(1) Take pressure gauge No.2 from air/hydraulic tool kit.

(2) Remove valve cap.

(3) Tighten pressure gauge No.2 to charging valve located at the upper part of shock absorber.

(4) Loosen valve control nut to a maximum of one turn and a half.

R WARNING : HOLD VALVE BODY WITH WRENCH WHILE ROTATING
R VALVE CONTROL NUT.

(5) Read pressure on pressure gauge.

(6) Read ambient temperature.

(7) Report the ambient temperature on the graph and read the corresponding pressure value.

(8) Check that the pressure read on the graph and that
R read at the pressure gauge are within a ± 5 bars
R ± 70 psi tolerance.

(9) Tighten valve control nut and torque to between 0.5
R and 0.85 m.daN (44 and 75 lbf. in.).

(10) Remove pressure gauge.

(11) Tighten valve cap.

D. Close-Up

R (1) Remove locking sleeve D925406000.

(2) Remove access platform.

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END OF THIS SECTION

NEXT